

Varazdin Development and Entrepreneurship Agency and University North
in cooperation with
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
ENCGT - Ecole Nationale de Commerce et de Gestion de Tanger - Abdelmalek Essaadi University
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Economic and Social Development

112th International Scientific Conference on Economic and Social Development –
"Creating a unified foundation for Sustainable Development: Interdisciplinarity in Research and
Education"

Book of Proceedings

Editors:

Bordin Rassameethes, Sasivimol Meeampol, Pornlapas Suwannarat

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Varazdin, 4-5 June, 2024

In Memoriam of Marijan Cingula, 04.06.2024.

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INTERNATIONAL COMPETITIVENESS OF EU IN THE AGE OF THE FOURTH INDUSTRIAL REVOLUTION

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ABSTRACT

Fourth Industrial Revolution represents important global challenge that disrupts society. Increasing international competitiveness represents crucial goal of each economy and during the 21st century, it is significantly affected by technologies and determinants of the Fourth Industrial Revolution. Main objective of this research is to determine whether Fourth Industrial Revolution enabled EU to reduce technological and development gap, and to increase its international competitiveness level. Method we used in is comparative analysis, where we compare EU and its member countries with the most important rivals on the global market during the period 2012 – 2019. Indicators we will take into consideration are related to export and digital competitiveness: industrial performance, innovation capacity and performance, and societal transformation towards the Fourth Industrial Revolution. The most important findings of this research are that EU is lagging behind for its most important rivals, and that there is a huge gap between developed and less developed EU economies that affect EU gap for its main rivals.

Keywords: *comparative analysis, digital transformation, EU, Fourth Industrial Revolution, international competitiveness*

1. INTRODUCTION

During the 21st century EU is faced with the development gap for its main rivals and one of the reasons for it is technological gap and lack of business dynamism. The Fourth Industrial Revolution represented great opportunity to overcome these gaps. Michelsen et al. (2021) confirm that EU is facing development and technological gap for China and USA, while EP (2015) mentioned that the Fourth Industrial Revolution will be key strategy to overcome it. EU has to invest in technologies of the Fourth Industrial Revolution. It will enhance technological development, increase productivity and competitiveness, and stimulate economic growth. Research problem set in this paper is related to impacts of the Fourth Industrial Revolution on EU international competitiveness, since as previously mentioned it is set as key European development strategy to overcome development and technological gap for its main rivals, and to resolve the gap in researching this topic, since Nuno Vicente and Dias-Trindade (2021) state that it is still understudied, same as Shalwani (2021) who states that it is beyond reindustrialization and that this topic requires more research. The most important objective of this research is to determine if the Fourth Industrial Revolution reached its goals in increasing EU international competitiveness level and reduced the gap for its main rivals.

Research questions set in this paper are:

- 1) How did the Fourth Industrial Revolution affect narrowing EU technological gap for its main rivals, and increasing EU international competitiveness level?
- 2) How does EU perform according to the indicators of international competitiveness in the period of the Fourth Industrial Revolution compared with its main rivals?

Hypotheses set in this paper are:

- 1) Fourth Industrial Revolution was successful strategy in reducing development and technological gap of EU and its member states.
- 2) EU performance in transformation towards the Fourth Industrial Revolution is successful when EU is compared with its main rivals.

The most important theoretical contribution of this paper is increasing knowledge about the Fourth Industrial Revolution that is understudied topic, especially having in mind that according to relevant literature like Noble et al. (2022), world entered into the Fifth Industrial Revolution, that despite certain similarities differs from the previous one. Another theoretical contribution is identifying its impacts on EU international competitiveness, and overcoming EU technological and development gap, and identifying reasons for such effects. The most important applicative contributions are policy guidelines based on the results of comparative analysis. Main limitations of this paper are lack of studies related to this topic, possibility of usage of different scientific methods, and possibility that there are multiple indicators of the Fourth Industrial Revolution and international competitiveness. Last limitation is the fact that UK is not included in the analysis due to Brexit. Limitations will be in detail explained in the conclusion section. This paper is structured as follows. In first or introductory part are provided short overview of the topic, research problem, goal, questions, hypotheses, contributions and limitations. In the second part is provided literature overview. Third part encompasses comparative analysis of international competitiveness of EU, its member states and the most important EU rivals according to the indicators of competitiveness in the Fourth Industrial Revolution. Fourth chapter comprises results and discussion. Last chapter is related to concluding remarks.

2. LITERATURE REVIEW

ECB (2021) states that EU is faced with technological gap, that causes development gap. EC (2015) emphasizes the Fourth Industrial Revolution as a key strategy to overcome this gap, by focusing on digitalization, innovation, reindustrialization and transformation of industry and society towards this new paradigm. Smit et al. (2022) confirms that despite being one of global economic leaders, EU copes with technological, and consequently development gap. One of the reasons for it is huge disparity between developed and less developed EU countries. EU should focus on the Industry 4.0 by enhancing innovations and transformation of industry and society towards the Fourth Industrial Revolution in order to overcome the gap. Tvaronaviciene and Burinskas (2020) emphasize that the Fourth Industrial Revolution, by focusing on manufacturing sector, innovations, technology and societal transformation should affect EU competitiveness, but its effects are questionable, since it requires huge investments and changes which impose challenges EU economy is not ready to cope with. Ross and Maynard (2016) define the Fourth Industrial Revolution as technological transformation of society in new millennium. Oosthuizen (2022), Signe (2023) and EP (2015) mention that technologies of the Fourth Industrial Revolution are Internet of Things, AI, blockchain, smart systems, robotics, big data, cyber physical systems, 5G, 3D printing and cloud computing. Castelo-Branco et al. (2023) state that the Fourth Industrial Revolution had different effects across industrial sectors and EU members.

Positive effects on international competitiveness are significantly higher in developed EU countries. Kondratiuk-Nierodzińska (2016) emphasizes the problem of technological gap among developed and less developed EU economies in innovation capacity, performance and knowledge output, while Weresa (2019) confirms digital divide among EU members and emphasizes importance of measuring international competitiveness during the Fourth Industrial Revolution using technology indicators, same as the fact that lack of digital convergence among developed and less developed EU countries is the reason for EU technological gap. Stanković et al. (2021) confirmed that EU is technologically competitive on international level, but there are huge differences among its members that affect the gap for the most important rivals. Mlynarewska – Borowiec (2021) confirms that despite being among the most developed parts of the world, EU is faced with technological gap for its main rivals. Guresci (2018) states that reasons for technological, and consequently development gap in EU, are innovation capability and performance, and productivity level. Kowalski (2021) states that despite the fact that EU and majority of its member states outperform China in technological competitiveness, Chinese growth rate is significantly higher than EU. Reasons for it are Chinese focus on innovations and R&D, policies that emphasize transformation of industry and society towards the Fourth Industrial Revolution and its technologies, FDI, and cooperation among academia, business, public institutions and education sector. Paterno-Castello and Grassano (2021) confirm these findings and emphasize the same reasons for the gap between EU, USA and Japan, emphasizing the role of R&D. Schäfer (2018) confirms importance of the Fourth Industrial Revolution in increasing digital competitiveness level, and states that USA outperforms EU because it is more successful in implementation of the Fourth Industrial Revolution and its technologies.

3. METHODOLOGY AND DATA

In this part, we will compare competitiveness of EU and its member countries with the most important rivals. Method we will use is comparative analysis. Azarian (2011) states that this method is one of the oldest methods used in social sciences, including economics, and that its origins go to Greek philosophy. It is very popular in comparison of different units, like national economies, companies, regions, in the certain period since it enables to identify characteristics, similarities and varieties among observed units and provide conclusions about it. He claims that scientific thinking is impossible without that method and emphasizes that in social sciences it is more suitable than statistical methods, since it provides better results and distinguishes social sciences from natural. It enables to see better the implicit and provide conclusions about organization of society. Smelser (1967) states that it is widely used in economic science for analysis of historical data, copes with similar shortcomings like statistical methods and enables wide cognition of differences in social contexts. Period taken into consideration is 2012 – 2019, since it is the period of the Fourth Industrial Revolution that started in 2011, and first effects might be seen in the year after, while relevant literature like Garcia (2021) states that due to Covid pandemic that caused rapid pace of digital transformation, 2020 is the beginning of the Fifth Industrial Revolution. First indicator taken into consideration, to measure industrial performance, is Competitive Industrial Performance Index. Reasons why we have chosen this indicator is because according to UNIDO (2024), it measures export competitiveness and transition of domestic industry towards the Fourth Industrial Revolution. UN (2013) and Hosseini and Moradi Haghighi (2023) state that it is the best indicator to measure industrial competitiveness in the age of the Fourth Industrial Revolution. It comprises three indicators. Manufacturing value added in total and per capita that measures capability of the manufacturing sector in certain country to produce and export goods. Technological upgrading measures transformation of the industry in certain national economy towards the Fourth Industrial Revolution. The last indicator, share of the country in production sector value added and global export of goods, measures global impact of domestic manufacturing sector on export.

Measurement includes 153 national economies and its values can be from 0 as minimum and 1 as maximum value. Second indicator we used to measure innovation capacity and performance is Global Innovation Index measured by WIPO (2024). It is the most comprehensive index that measures innovation performance and capacity of 140 countries, because it includes different indicators that affect innovativeness like political, legal, technological and social environment, transition to knowledge based economy. Values can be from 0 as minimum and 100 as maximum. It is used as an indicator of digital competitiveness in relevant literature like Marti and Puertas (2023) which emphasize it as an indicator of competitiveness in the digital age, and confirm the problem of technological gap among developed and less developed EU economies that affects EU technological gap. Another reason why we use this indicator is because EP (2015) emphasizes innovation as a key for transition towards the Fourth Industrial Revolution. The last indicator we use is Global Connectivity Index created by Huawei (2024) that measures societal transformation towards the Fourth Industrial Revolution. It encompasses 79 global economies that create 95% of global economic activity. It includes four technology enablers: broadband Internet, AI, IoT and cloud; four pillars: technology supply, demand, experience and potential, and 40 indicators related to pillars and enablers that measure transformation towards the Fourth Industrial Revolution because they are related to its technologies like AI, 4G/5G, IoT, cloud and enablers like R&D, investments, usage and laws related to ICT and technologies of the Fourth Industrial Revolution, digitalization of society through online public and private services and business models, quality of ICT infrastructure. Its values can be from 0 as minimum to 89 as maximum. This index is very comprehensive in measuring not only industrial, but also economic and societal transformation towards the Fourth Industrial Revolution. It is confirmed to be an indicator of international digital competitiveness in the 21st century by relevant literature like Konstantinova and Kramarenko (2022).

4. RESULTS AND DISCUSSION

In this chapter will be provided results of comparative analysis and discussion. EU countries are divided on developed and less developed. In the group of developed economies belong: Austria, Germany, France, Ireland, Benelux and Scandinavian members, while all other countries belong to the group of less developed economies. Reasons for it, according to Weresa (2019) are differences in their economic and technological development. As main EU rivals are taken USA, China, South Korea and Japan because according to EC (2024) they are together with EU leading global exporters and the most developed economies. For all indicators, EU annual average is calculated by suming values of all members and dividing with 27. Countries are ranked according to average value for observed period, and it is calculated by suming values for each year and dividing with number of years.

Table following on the next page

	2012	2013	2014	2015	2016	2017	2018	2019	Rank	Country	Average score
Austria	0,2281	0,2256	0,2258	0,2063	0,2082	0,2092	0,2051	0,2080	1.	Germany	0,4910
Belgium	0,2737	0,2794	0,2715	0,2491	0,2498	0,2466	0,2419	0,2420	2.	USA	0,4005
Bulgaria	0,0527	0,0525	0,0531	0,0491	0,0511	0,0527	0,0524	0,0540	3.	Japan	0,3848
Croatia	0,0519	0,0496	0,0507	0,0489	0,0508	0,0515	0,0503	0,0520	4.	South Korea	0,3583
Cyprus	0,0141	0,0137	0,0141	0,0144	0,0155	0,0170	0,0174	0,0170	5.	China	0,3513
Czech Republic	0,1985	0,1926	0,1995	0,1887	0,1937	0,2016	0,2019	0,2030	6.	Ireland	0,2931
Denmark	0,1735	0,1718	0,1728	0,1569	0,1694	0,1660	0,1617	0,1760	7.	Netherlands	0,2617
Estonia	0,0677	0,0664	0,0657	0,0586	0,0585	0,0588	0,0599	0,0600	8.	Italy	0,2574
Finland	0,1642	0,1609	0,1577	0,1373	0,1388	0,1431	0,1413	0,1450	9.	Belgium	0,2568
France	0,2775	0,2696	0,2676	0,2468	0,2474	0,2437	0,2371	0,2380	10.	France	0,2535
Germany	0,5203	0,5078	0,5150	0,4788	0,4883	0,4864	0,4709	0,4600	11.	Austria	0,2146
Greece	0,0689	0,0684	0,0667	0,0576	0,0580	0,0592	0,0596	0,0580	12.	Sweden	0,2105
Hungary	0,1404	0,1377	0,1415	0,1365	0,1380	0,1384	0,1388	0,1380	13.	Czech Republic	0,1974
Ireland	0,2551	0,2384	0,2456	0,3076	0,3190	0,3176	0,3304	0,3310	14.	Spain	0,1846
Italy	0,2759	0,2702	0,2690	0,2486	0,2520	0,2532	0,2443	0,2460	15.	Denmark	0,1685
Latvia	0,0476	0,0464	0,0468	0,0432	0,0436	0,0459	0,0458	0,0460	16.	EU average	0,1532
Lithuania	0,0793	0,0807	0,0819	0,0737	0,0745	0,0787	0,0785	0,0810	17.	Poland	0,1529
Luxembourg	0,0678	0,0692	0,0659	0,0652	0,0676	0,0651	0,0632	0,0640	18.	Finland	0,1485
Malta	0,0435	0,0384	0,0388	0,0356	0,0357	0,0351	0,0331	0,0350	19.	Hungary	0,1387
Netherlands	0,2817	0,2760	0,2752	0,2471	0,2486	0,2548	0,2520	0,2580	20.	Slovakia	0,1356
Poland	0,1483	0,1505	0,1554	0,1480	0,1513	0,1538	0,1587	0,1570	21.	Slovenia	0,1058
Portugal	0,1009	0,1008	0,1012	0,0935	0,0949	0,0963	0,0971	0,0960	22.	Romania	0,0994
Romania	0,0949	0,0983	0,1011	0,0946	0,0990	0,1017	0,1034	0,1020	23.	Portugal	0,0976
Slovakia	0,1322	0,1318	0,1374	0,1330	0,1378	0,1386	0,1403	0,1340	24.	Lithuania	0,0785
Slovenia	0,1070	0,1054	0,1080	0,0991	0,1023	0,1065	0,1070	0,1110	25.	Luxembourg	0,0660
Spain	0,1904	0,1915	0,1924	0,1805	0,1851	0,1856	0,1811	0,1700	26.	Greece	0,0621
Sweden	0,2426	0,2313	0,2216	0,1993	0,1993	0,1992	0,1953	0,1950	27.	Estonia	0,0620
EU average	0,1592	0,1565	0,1571	0,1481	0,1511	0,1521	0,1507	0,1510	28.	Bulgaria	0,0522
China	0,3767	0,3832	0,3911	0,3770	0,3727	0,3744	0,3716	0,1640	29.	Croatia	0,0507
Japan	0,4110	0,3816	0,3760	0,3525	0,3592	0,3564	0,3445	0,4970	30.	Latvia	0,0457
South Korea	0,3862	0,3821	0,3820	0,3585	0,3527	0,3611	0,3488	0,2950	31.	Malta	0,0369
USA	0,4145	0,4055	0,4022	0,3753	0,3636	0,3576	0,3454	0,5400	32.	Cyprus	0,0154

Table 1: Industrial performance

(Source: Made by author based on: United Nations Industrial Development Organization, 2024)

All competitors significantly outperform the EU and its member countries, except Germany that is European and global leader in this indicator. This indicator implies big problem of disparity and lack of technological convergence between developed and less developed EU economies, since only Italy, Spain and Czech Republic are above EU average, while from the group of developed EU members, Luxembourg and Finland are below it. Italy, Spain and Czech Republic have rich industrial inheritance due to historical reasons. We can also see, that EU average value is lower at the end of the observed period than at the beginning, same as South Korean, while other main competitors reach higher value at the end of the observed period. Despite the fact that certain developed EU members reach lower value at the end of the period than at the beginning, unlike certain countries from the group of less developed EU members, this table confirms significant disparities in industrial development, performance and transformation of industry towards the Fourth Industrial Revolution among rich and poorer EU members. According to this indicator, there is no convergence among developed and less developed EU economies, since only in Czech Republic, Cyprus, Ireland, Poland and Slovakia, indicator reaches higher value at the end of the period, but the growth rate is too small for significant convergence.

Table following on the next page

	2012	2013	2014	2015	2016	2017	2018	2019	Rank	Country	Average score
Austria	53,10	51,87	53,41	54,07	52,65	53,10	51,32	50,94	1.	Sweden	63,12
Belgium	54,30	52,49	51,69	50,91	51,97	49,85	50,50	50,18	2.	Netherlands	61,28
Bulgaria	40,70	41,33	40,74	42,16	41,42	42,84	42,65	40,35	3.	USA	60,32
China	45,40	44,70	46,57	47,47	50,57	52,54	53,06	54,82	4.	Finland	59,98
Croatia	40,70	41,95	40,75	41,70	38,29	39,80	40,73	37,82	5.	Denmark	58,43
Czechia	49,70	48,36	50,22	51,32	49,40	50,98	48,75	49,43	6.	Ireland	57,86
Denmark	59,90	58,34	57,52	57,70	58,45	58,70	58,39	58,44	7.	Germany	57,21
Estonia	55,30	50,60	51,54	52,81	51,73	50,93	50,51	49,97	8.	Luxembourg	56,46
Finland	61,80	59,51	60,67	59,97	59,90	58,49	59,63	59,83	9.	South Korea	55,85
France	51,80	52,83	52,18	53,59	54,04	54,18	54,36	54,25	10.	Japan	53,65
Germany	56,20	55,83	56,02	57,05	57,94	58,39	58,03	58,19	11.	France	53,40
Greece	35,30	37,71	38,95	40,28	39,75	38,85	38,93	38,90	12.	Austria	52,56
Hungary	46,50	46,93	44,61	43,00	44,71	41,74	44,94	44,51	13.	Estonia	51,67
Ireland	58,70	57,91	56,67	59,13	59,03	58,13	57,19	56,10	14.	Belgium	51,49
Italy	44,50	47,85	45,65	46,40	47,17	46,96	46,32	46,30	15.	Malta	51,14
Japan	51,70	52,23	52,41	53,97	54,52	54,72	54,95	54,68	16.	Czechia	49,77
South Korea	53,90	53,31	55,27	56,26	57,15	57,7	56,63	56,55	17.	EU average	49,43
Latvia	47,00	45,24	44,81	45,51	44,33	44,61	43,18	43,23	18.	China	49,39
Lithuania	44,00	41,39	41,00	42,26	41,76	41,17	41,19	41,46	19.	Spain	48,69
Luxembourg	57,70	56,57	56,86	59,02	57,11	56,40	54,53	53,47	20.	Slovenia	47,10
Malta	56,10	51,79	50,44	50,48	50,44	50,60	50,29	49,01	21.	Italy	46,39
Netherlands	60,50	61,14	60,59	61,58	58,29	63,36	63,32	61,44	22.	Portugal	45,69
Poland	40,40	40,12	40,64	40,16	40,22	41,99	41,67	41,31	23.	Latvia	44,74
Portugal	45,30	45,10	45,63	46,61	46,45	46,05	45,71	44,65	24.	Hungary	44,62
Romania	37,80	40,33	38,08	38,20	37,90	39,16	37,59	36,76	25.	Slovakia	42,32
Slovakia	41,40	42,25	41,89	42,99	41,70	43,43	42,88	42,05	26.	Lithuania	41,78
Slovenia	49,90	47,32	47,23	48,49	45,97	45,80	46,87	45,25	27.	Bulgaria	41,52
Spain	47,20	49,41	49,27	49,07	49,19	48,81	48,68	47,85	28.	Poland	40,81
Sweden	64,80	61,36	62,29	62,40	63,57	63,82	63,08	63,65	29.	Croatia	40,22
USA	57,70	60,31	60,09	60,1	61,4	61,4	59,81	61,73	30.	Greece	38,58
EU average	50,02	49,44	49,21	49,88	49,36	49,54	49,28	48,67	31.	Romania	38,23

Table 2: Innovation capacity and performance
 (Source: Made by author based on: World Intellectual Property Organization (2024))

This indicator again confirms the gap between EU and its main competitors, and even higher gap among developed and less developed EU member countries. EU average value is lower at the end of the period than at the beginning, and is mostly decreasing, while all other competitors in majority of years reach higher average value. In average value for observed period, EU outperforms only China, but looking each year separately China outperforms EU since 2016. Estonia, Malta and Czech Republic are only countries from the group of poorer EU economies that are above EU average and outperform China in average value for the period, but same as EU average, looking each year separately China outperforms all these countries since 2015 or 2017. In this indicator, developed EU members significantly outperform China. Sweden and Netherlands are the frontrunners. USA is on the third place, while Denmark, Finland, Ireland, Germany and Luxembourg outperform South Korea and Japan. In the table, we can also see that less developed EU economies do not increase their innovation capacity faster than developed, what is confirmed in the literature review. Also, there is no convergence, since in majority of observed countries value in initial year is lower than in the last, except in France, Germany, Greece, Italy, Netherlands, Poland, Portugal, Romania, Slovakia and Spain, but growth rate in less developed economies is too small for significant convergence.

Table following on the next page

	2015	2016	2017	2018	2019	Rank	Country	Average score
Austria	57	60	61	63	65	1.	USA	77
Belgium	58	59	60	61	65	2.	Sweden	75
Bulgaria	41	42	44	47	51	3.	Denmark	71
China	43	46	53	56	60	4.	Finland	70
Croatia	43	44	46	48	50	5.	Netherlands	69
Czechia	48	51	53	55	58	6.	Japan	69
Denmark	66	68	71	74	78	7.	South Korea	67
Estonia	51	55	58	60	62	8.	Germany	65
Finland	66	67	69	72	75	9.	Luxembourg	64
France	57	60	62	64	68	10.	France	62
Germany	59	62	65	68	69	11.	Austria	61
Greece	41	44	45	48	50	12.	Ireland	61
Hungary	44	48	49	50	54	13.	Belgium	61
Ireland	57	58	59	64	67	14.	Estonia	57
Italy	49	51	52	54	57	15.	EU average	57
Japan	65	68	68	69	73	16.	Spain	56
South Korea	65	67	67	68	70	17.	Portugal	54
Lithuania	45	49	51	54	56	18.	Czechia	53
Luxembourg	59	61	63	68	69	19.	Italy	53
Netherlands	64	67	67	72	74	20.	Slovenia	53
Poland	43	44	46	50	51	21.	China	52
Portugal	49	52	53	56	60	22.	Lithuania	51
Romania	43	45	46	49	51	23.	Slovakia	49
Slovakia	45	47	49	52	53	24.	Hungary	49
Slovenia	49	51	53	54	56	25.	Poland	47
Spain	52	54	56	58	60	26.	Romania	47
Sweden	70	72	74	78	81	27.	Croatia	46
USA	71	74	77	81	84	28.	Greece	46
EU average	52	55	56	59	62	29.	Bulgaria	45

*Table 3: Societal transformation towards the Fourth Industrial Revolution
 (Source: Made by author based on: Huawei, Global connectivity index, 2021)*

This indicator is the only one measured from 2015, and not 2012, since 2015 was the year when it was launched. In this indicator EU outperforms only China, while same like in other indicators, we notice huge disparities among developed and less developed EU members. Estonia is the only country above the EU average. This indicator provides promising results, since EU average value is higher at the end of the observed period than on the beginning for 10 points, same like in all EU members, but despite this fact, this indicator again confirms technological gap between EU and majority of main rivals and among developed and less developed EU members. Despite the fact that EU outperforms China, it is important to say that China grew faster in the observed period from 43 to 60 points, while EU grew from 52 to 62 points, what implies that China converged faster than EU. Also, from the table, we can see that poorer EU economies did not grow faster than developed or EU competitors. All observed countries marked higher value in the final than in the initial year, but growth is even higher in developed economies, what is in accordance with relevant literature like Castelo-Branco et al. (2023). Comparative analysis confirms that EU copes with technological and development gap for its main rivals. All indicators taken into consideration confirm that EU lags behind and converges slower than the most important rivals. Based on the results of comparative analysis, we can conclude that one of the main reasons for it is lack of convergence between developed and less developed EU economies. In ranking by Competitive Industrial Performance Index and Global Innovation Index, majority of EU economies mark lower value in final than initial year, while main competitors advance in these indicators and converge much faster than EU.

Despite Fourth Industrial Revolution was EU strategy created to overcome the gap for main competitors, based on these three indicators, we can conclude that EU competitors were much more successful in transformation of industry, economy and society towards this new paradigm. Based on the results of comparative analysis first hypothesis that the Fourth Industrial Revolution was successful strategy in reducing development and technological gap of EU for its main rivals is rejected since our results confirm that gap is not reduced, but the opposite, it is increased, since main rivals develop or converge faster according to indicators used in comparative analysis. Second hypothesis that states that EU performance in transformation towards the Fourth Industrial Revolution is successful when EU is compared with main rivals. is partially accepted, since EU outperforms China in average value in two of three indicators, and developed EU economies are successful in performance compared to main rivals, while poorer EU economies mark low convergence rates.

5. CONCLUSION

In this research, we wanted to determine the level of EU international competitiveness using indicators of digital and export competitiveness adjusted to the period of the Fourth Industrial Revolution that is observed in this paper. Our main motivation was to identify if the Fourth Industrial Revolution strategy reached its main purpose, and it is to overcome development and technological gap between EU and its main competitors. Activities we undertook were literature review and comparative analysis where we have taken indicators of export and digital competitiveness, since as mentioned previously competitiveness should be observed from technological point of view, especially having in mind that EU and its member countries cope with technological gap that causes development gap. The most important theoretical contributions which come out from the comparative analysis, are increasing knowledge about the Fourth Industrial Revolution that is understudied topic and its impacts, and identifying its effects on EU competitiveness, development and technological gap, since it is marked as key strategy to overcome this gap and increase competitiveness, same as reasons for such impacts. Based on the results of this research, we can conclude that the Fourth Industrial Revolution did not contribute to reduce development and technological gap and did not have significant effects on increasing EU and its member states competitiveness. Reason is lack of technological convergence among developed and less developed EU economies. The most important applicative contribution are policy guidelines which come out from the results of comparative analysis. EU policy makers have to focus on more efficient transformation and transition of society and industry towards the Fourth Industrial Revolution and to create macroeconomic environment attractive for innovations, especially in poorer EU economies. The most important thing that EU policy makers have to do is focusing on reducing development and technological gap among developed and less developed EU economies. Cohesion policy and enhancing regional development should be the essence of this goal where EU funds have to be directed towards competitive and innovative industries, especially in the field of high tech. Results show that poorer EU economies perform much worse than developed and since there are multiple indicators of mentioned indicators, EU policy makers have to focus on creation of macroeconomic framework in these economies that will be based on rule of law and increasing government efficiency in these economies. Political framework that is a part of Global Innovation Index is foundation for other types of development like economic or technological. Also, it is very important to enhance digitalization and education, not only in high tech fields, but in all others. Across EU, it is necessary to enhance collaboration among public sector, academia, education, science and business sector. It will generate innovations and technological development.

For EU it is necessary to enhance business dynamism and to create framework to attract foreign investments, same as creation of start ups in the field of high tech that generates higher added value and is focused on usage and development of technologies of the Fourth Industrial Revolution. One of the limitations of this paper is lack of studies related to the topic of the Fourth Industrial Revolution, but this is the reason why it is necessary to write about that topic and its impacts in order to increase knowledge and to contribute to scientific discussion about it. Another limitation is the possibility of inclusion of other indicators of the Fourth Industrial Revolution and international competitiveness, but as mentioned previously, in the period of the Fourth Industrial Revolution, it is important to measure digital competitiveness and the fact is that EU is faced firstly with technological gap that causes development gap. All indicators are according to relevant literature used as indicators of competitiveness in the 21st century and Fourth Industrial Revolution. Competitive Industrial Performance Index also measures export competitiveness of the economy, since two of three indicators measure it. This indicator integrates export and digital competitiveness. Global Innovation Index that is used in our research encompasses variety of indicators that affect export and in general competitiveness, like political, technological and economic framework, quality of education system and human capital. The reason why we used these indicators is also due to their comprehensiveness and the fact that they encompass variety of determinants that affect international competitiveness and development in the period of the Fourth Industrial Revolution. Limitation might also be usage of comparative analysis, but as mentioned previously, it is one of the oldest methods in each social science, widely used, especially in cross country comparissons and analysis of historical data. According to relevant literature it has similar shortcomings as statistical methods. Last limitation is not inclusion of EU due to Brexit. Despite the fact that Brexit officially happened in 2020, after observed period, UK voters have chosen it in 2016, and through this analysis it was aimed to create policy guidelines for EU after Brexit. This paper provides different possibilities for the further research. Since, in 2020 world entered into the Fifth Industrial Revolution, that represents continuation of the previous one, it is possible to examine impacts of this revolution on EU competitiveness and reducing technological and development gap. Also, it is possible to include other indicators of digital competitiveness and the Fourth Industrial Revolution, like Digitalization index, IMD digital competitiveness index, Global talent competitiveness index, IMD digital talent ranking, AI government readiness index or indicators comprised in indexes used in this comparative analysis. Another area for further research is measuring impacts on competitiveness of the country, using indicators of export competitiveness, like export per capita, export-import ratio, export growth, export share in global market or measuring effects on development, using indicators like GDP, GDP per capita, GDP growth, GDP per capita growth, unemployment, business density and etc.

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THE RIGHT OF USUFRUCT IN CONTEMPORARY BUSINESS ACTIVITIES

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ABSTRACT

The right of usufruct is a form of personal servitude, i.e. a right that is registered in the land registers of the court. It is not an extended practice in Croatia, however, there are no obstacles to a greater use of usufruct in business. The aim of the paper is to present and analyze the rights of usufruct in the context of contemporary business activities. The authors present the concept of personal servitudes in Croatian law, a brief historical development of usufruct, analyze the provisions on usufruct in the Law on Property and Other Real Rights and other relevant legal acts, as well as rules of acquiring, protecting and terminating usufruct. Special attention is paid to usufruct in enforcement proceedings. The authors advocate more frequently use of usufruct in contemporary business, pointing out its advantages over contracts of sale and business lease. These advantages can facilitate entrepreneurs business activities.

Keywords: *business, lease contract, personal servitudes, sale contract, usufruct*

1. INTRODUCTION

According to the provisions of Article 174., paragraph 1. of The Law on Ownership and Other Real Rights (hereinafter: ZV), the right of servitude is a form of limited rights in rem on someone's thing that authorizes its holder to use that thing (the servient thing) in a certain way, regardless it's ownership, and its everyday owner is obliged to sustain or omit something because of that. ZV sets basic common features of servitudes as a limited right in rem as a right in rem on someone's else thing (nemini res sua servit), a right in rem that can't exist on servitudes (servitus servitutis esse non potest), which cannot oblige to performance obligation (servitus in faciendo consistere nequit), it must have a reasonable purpose and must be executed with consideration (Perkušić, 2014., p.107-130.). In accordance with the tradition established by Justinian's law, later accepted by the OGZ, and other legislation of the Central European legal circle, ZV defines servitudes as a unique legal institution.(Perkušić, 2016., p. 205.) Although servitudes are determined as a single institute, and ZV contains the general provisions common to all servitudes in its fourth part (Chapter 1), servitudes still can be divided depending on different criteria.(Gavella, et.al., 2007., p. 13.) The fundamental division of servitudes is the division into real, personal and irregular, depending on how beneficiary of the right is determined. (Gavella, et.al., 2007., p. 13.) According to the provisions of Article 175., paragraph 2., ZV, if the purpose of the easement is better and more useful management of the real estate, the easement is real, otherwise it is personal. A personal servitude is a right in rem that authorizes an individually determined person to use someone else's property in a certain way (servient property), whose owner must bear this (Article 199., paragraph 1., ZV). The number of personal servitudes in Croatian law is limited to the right of usufruct, the right of use and the right of residence (Article 199., paragraph 1., ZV). Since every real easement can be established as an irregular one, i.e. in favor of a specific person as the owner of privileged real

estate (and not in favor of the owner), the number of personal easements in our legal system is actually unlimited. (Gavella, et.al., 2007., p. 37.) Personal servitudes as a strictly personal right are always determined in favor of a named person, "personaliter", who can be a physical or legal entity (Klarić, Vedriš, 2014., p. 324.).

2. PERSONAL SERVITUDES

Personal servitudes are servitudes that authorizes the entitled person to use someone else's (serviceable) thing in a certain way, and the owner of thing has to sustain. (Article 199., paragraph 1., ZV). It is a strictly personal right intended for the benefit of a specific person, because the meaning of personal servitudes is to enable a specific person to exploit someone else's property for reasonable purpose (Article 175., paragraph 1., ZV). Personal servitudes are created on the basis of a legal transaction, most often a contract or a will, and they last, as a rule, for the time period for which they were established, at the longest until the death of the authorized person. (Article 201., ZV). If personal servitudes are expressly established for the benefit of the assignee's heirs, despite the principle of non-transferability of personal servitudes, they pass to the heirs by inheritance (Article 202., paragraph 2., ZV). Upon the death of the heir, the personal servitude is extinguished. (Article 202., paragraph 3., ZV). Although personal servitudes are, again, in principle, non-transferable, the assignee of the personal servitude is authorized to leave the execution of the personal easement to another person, free of charge or for a fee. (Article 204., paragraph 2., ZV). Thus, the usufruct authorizes to fully use the property and to harvest fruit (fructus).

3. USUFRUCT

The right of usufruct, therefore, is a personal servitude on the basis of which the holder is authorized to use someone's property in accordance with its purpose in every respect, preserving its coexistence. (Article 203., paragraph. 1., ZV). The usufructuary right enables the usufructuary, who can be a natural person or a legal entity, to enjoy the fruits and benefits of someone else's real estate, such as natural fruits, rental income or some other economic benefits arising from that real estate.

3.1. Historical development of usufruct

Usufructus appeared in Roman law at a time that can be traced back to the end of the republic, and most often in the form of a bequest by which the testator tried to ensure the maintenance of a close person. Thus, the testator left the property to the descendants as universal successors, and he would leave usufruct to the wife until the end of her life. Thus, usufructus represented a burden on the estate that limited the rights of the heirs, but only until the end of the life of the usufructuary, if the easement was not established for a shorter period of time. Usufruct, in short, has one of the essential features of ownership in Roman Law, it is a right to the enjoyment of land, not capable of definite limitation, and which, like ownership, admits only of a negative description. (Hunter, Cross, 2024., p. 223.) Although it was usually created in connection with mortis causa transactions, there was no obstacle to usufructus being established by some other legal transaction inter vivos. (Romac, 2007., p. 214.) The object was most often real estate, but there was no obstacle for it to be movable as well, provided that they were non-consumable things, because after its termination, the thing had to be returned to the owner, and this was not possible with consumable things. (Romac, 2007., p. 214.). Roman law also knew the institute "quasi usus fructus". From a historical legal point of view, in the Republic of Croatia, the provisions of the General Civil Code applied to personal easements until the adoption of the Civil Code. On the basis of the imperial patent dated November 29, 1852, the Allgemeines Bürgerliches Gesetzbuch (ABGB) came into effect on May 1, 1853, in those parts of Croatia to which the legislative power of the Parliament of the Triune Kingdom of Croatia, Slavonia and

Dalmatia reached at that time. Its introduction marked a break with the earlier Hungarian and Croatian feudal legal and social order and, since it was built using rationalist law, opened the way for social progress and the removal of obstacles to the free market. (Gavella, Klarić, 2005., p. 30 -31.) After the fall of Bach's absolutism in 1860, Croatia, unlike Hungary, did not use the newly acquired autonomy to abolish the ABGB, but on its territory it continued to be valid, but as its own, Croatian civil code - OGZ, and no longer as ABGB. (Gavella, Klarić, 2005., p. 37.). Austrian laws were still in force in Dalmatia and Istria. With the independence of the Republic of Croatia and the entry into force of the ZV and the Law on Land Registers (hereinafter: ZZK), our general real legal arrangement has a consistent system of rights in rem (Perkušić, 2016., p. 205.).

3.2. Object of usufruct

The objects of usufructuary rights are things with all their benefits. Thus, a servient thing can be both a movable thing and real estate, but also a right with its benefits (Article 203., paragraph 4., ZV). In addition to the fact that it can also exist on movable property (both on one movable property and on several movable things together), the usufructuary right is one of the rare cases in which the right can also be the subject of a right in rem, provided that it yields fruits or other benefits (e.g. interest bearing principal). Considering that the right of usufruct is a divisible servitude, it can also exist on an aliquot part of the servient thing. (Gavella, 2007., p. 38.) Excerpt of the judgment of the County Court in Slavonski Brod, GŽ-1477/2017-2 of December 4, 2017; "it is clear that the plaintiff based her claim on the right of usufruct on the co-owned part of the defendant's real estate". Only false usufruct (quasi usufructus) is possible on a consumable thing and on a right that does not bear fruit. The quasi-usufructuary acquires the right of ownership of the thing, so after the termination of the wrongful usufruct, he is obliged to return its value in money. There, therefore, the servient thing is actually its monetary equivalent, which is returned to the owner after the termination of the usufruct (Lozančić, 2023., p. 19.).

3.3. Substance of usufruct

Pursuant to the provisions of Article 204, paragraph 1, ZV, the usufructuary right holder is authorized to use the servient thing in accordance with its purpose, to own it as a non-independent owner and to use it completely for himself, within the limits of preserving the coexistence of the object of usufruct, while preserving the fundamental purpose of the servient thing. ZV prescribes that the owner of a servient thing may exercise his right of ownership if he does not thereby violate the usufructuary's right (Article 204., paragraph 3., ZV). The County Court in Zadar, in judgment, number: Gž 24/2018-2, dated January 19, 2018., rejected the defendant's appeal and confirmed the first-instance verdict in which the court ordered the defendant (property owner) to hand over the apartment free of persons and things into exclusive possession to the plaintiff for whose benefit the usufructuary right on the property in question was founded, regardless of the defendant's statements that the property in question is her only home and that she has no other properties. Likewise, in another case of the County Court in Rijeka, Gž 1432/2016-2 of February 8, 2017., the court stated that in the case when the servient real estate is owned by several co-owners, each of them must suffer that the assignee of the right of usufruct that charge their real estate serves the real estate in the manner authorized by his right.

3.4. Aquisition of usufruct

The basis for acquiring the right of usufruct is a valid one-sided (will) or two-sided (contract) legal transaction. If the servient thing is co-owned or jointly owned, usufruct can only be established by all co-owners or joint owners in agreement (Article 219., paragraph 5., ZV).

The right of usufruct as a divisible easement can also be established by an individual co-owner on his aliquot part. We find confirmation of the above position in recent judicial practice. Thus, in decision Gž Zk 589/2017-2 of September 14, 2017., the County Court in Split took the position that personal servitudes can exist on the ideal part of the servient property. In the specific case, it was about establishing the right of usufruct on the co-owned part of the real estate, taking into account the content of the easement and the nature of the subject, but with the note that the right of usufruct in that case cannot extend to the entire servient thing because the usufructuary cannot have more rights than co-owner who granted them the right of usufruct. The contract establishing the easement, as a bilateral legal transaction, must meet all the general assumptions of the validity of the legal transaction, that is, the contract according to the general rules of mandatory law. As far as the form of the contract is concerned, it should be concluded in writing, in case the servient thing is real estate (Article 219., paragraph 4., ZV). Thus, in case Rev 613/2007-2 of June 15, 2007., the Supreme Court of the Republic of Croatia ordered the establishment of the previous land registry status of real estate in such a way as to delete the right of usufruct on these real estates from the name of the defendant due to the invalidity of the usufruct establishment agreement concluded between the plaintiff and the defendants. The contract can be charged or free of charge, depending on whether it is agreed that the acquirer must pay for the easement he acquires, that is, perform countermeasures or not. For the right of usufruct to arise, it is necessary to have a legal basis and a proper method of acquisition, which, in turn, depends on the object of usufruct. Thus, the right of usufruct on real estate is established by registering that right in the land register as an encumbrance on the servient real estate, unless the law allows the servitude to be established differently (Article 220., paragraph 1., ZV). The right of usufruct on a movable property is established by handing over the property to the acquirer in non-independent possession on the basis of the owner's validly manifested will aimed at the transfer of the right of easement to the acquirer, unless otherwise determined by law (Article 222., paragraph 1., ZV).

3.5. Legal remedies in cases of infringement

Rights in rem operate erga omnes, therefore every legal entity is a potential violator of a certain right in rem. The Civil Code does not provide for the special protection of usufructuary rights, but the provisions of the Civil Code regulate the protection of servitude rights in general. Thus, in order to protect his right in the event of illegal encroachment, usufructuary has at his disposal general means of protection - self-help and a lawsuit for the protection of property, a mandatory legal request for the fulfillment of the contract on the establishment of the easement, a prejudicial lawsuit to establish the existence of the easement right (and that when lawsuit allowed according to the rules of procedural law) and means for the protection of book rights according to the rules of land registry law as prescribed by art. 236 of the ZV. (Gavella, 2007., p. 24.) In addition to these means of protection, the assignee also has at his disposal a request for respect of the right of easement (*actio confessoria* or lawsuit for recognition) and a lawsuit by the alleged assignee of the easement (*actio confessoria publiciana*). The request for respect of easement rights from Article 233., paragraph 1., ZV stipulates that the assignee of the right of easement, and the same applies to the right of usufruct, has the right to demand from the owner of the servient thing the recognition and tolerance of the right of easement as a burden on the servient thing and suffer the exercise of the assignee's right on it, i.e. failure to act on it what he is obliged to let go due to the rights of the authorized person. The authorized person has the right to demand the same from any other person who denies his right of easement or arbitrarily prevents or disturbs him in the exercise of that right. In order for the authorized person to be able to exercise his right before the court or some other competent authority according to the provisions of Article 234., ZV must be able to prove its easement right as well as the defendant's act of preventing or disturbing the exercise of that right.

The right to a request for respect of the right of easement ends after the expiration of a period of 20 years from the day when the authorized person was deprived of or interfered with the possession of that right of easement (Article 233., paragraph 3., ZV). The claim of the alleged holder of the easement serves the one who, in the proceedings before the court or other competent authority, proves the legal basis and the true way of acquiring the possession of the easement (Article 235., paragraph 1., ZV). By proving the title and mode of acquisition, the assignee becomes the presumptive assignee of the easement, so the rules on the presumptive owner's claim are applied accordingly to his lawsuit (Article 235., paragraph 2., ZV).

3.6. Termination of usufruct

The usufructuary right will cease as a right in rem upon the destruction of the encumbered thing (Article 237., paragraph 1., ZV). However, if instead of the failed servient thing, a right has arisen that replaces it, the right of usufruct still exists on that right as a servient thing (Article 237., paragraph 3., ZV), upon relinquishment, expiration of the term and fulfillment of the termination condition, and as a right to third party's business will end with merger, termination of authorization and termination. (Article 239., paragraph 1., ZV, Article 240., paragraph 1., ZV, Article 240., paragraph 2., ZV, Article 244., Article 242., paragraph 1., ZV) The easement is also a right in rem that can expire by statute of limitations. Thus, the right of servitude will expire with the statute of limitations if it has not been exercised within 20 years (Article 241., paragraph 1., ZV), and if it is a right of servitude that can be rarely exercised by its nature, it will not cease with the statute of limitations until three times there is a possibility to execute its content and the authorized person does not do so (Article 241., paragraph 2., ZV). ZV also defines a special case of non-execution of the easement (the so-called *usucapio libertatis*). This is a situation in which the servitude will cease if the owner of the servient object objects to its execution, and the authorized person has therefore not executed his servitude continuously for 3 years (Article 241., paragraph 3., ZV). Although the rule is that servitudes do not end when the object of servitudes has been sold in the enforcement proceedings, there are exceptions to this rule with regard to usufructuary rights (Gavella, 2007, p. 31.).

3.7. Usufruct in enforcement procedure

If a right of usufruct has been established with respect to some real estate or its ideal part, it can be an independent object of enforcement, and the bailee can settle his claim from the fruits that this right gives on the basis of some legal relationship, in respect of which the rules of the Enforcement Act (hereinafter: OZ) on enforcement of rights, chapter seventeen, enforcement of other property or material rights are appropriately applied. Enforcement is carried out by confiscation of that right and its cashing in accordance with the provisions on the sale of movable property (Article 239., and Article 240. ZV) In the decision of County Court in Varaždin, Permanent Service in Koprivnica, Gž Ovr 1516/2018-2 from February 4, 2019., the Court took the position that the bailiff cannot seek enforcement by selling the right of usufruct, but in terms of the OZ, he can realize his claim only from the fruits that the right of usufruct provides based on the legal transaction (such as, for example, rent, lease), which means that the confiscation would be carried out by confiscation, assessment and sale of the right to use the personal easement and settlement of the bailiff. OZ prescribes that the sale of real estate does not terminate personal easements that were entered in the land register before the rights for the settlement of which enforcement is being carried out. Other personal servitudes cease with the finality of the decision on the award of real estate (Article 87., paragraph 2., OZ). This is also the position of judicial practice regarding the right of usufruct. In the judgment of the County Court in Varaždin, Permanent Service in Koprivnica, Gž Ovr 660/2019-3 of October 5, 2020., it is pointed out: "The right of usufruct, residence and use held by third parties on certain

real estate does not prevent execution on that real estate, but in that case, third parties are authorized to demand that the enforcement be declared inadmissible for the purpose of vacating and handing over the possession of that real estate".

4. ADVANTAGES OF USUFRUCT IN CONTEMPORARY BUSINESS ACTIVITIES

The right of usufruct can make life easier for entrepreneurs when carrying out their entrepreneurial activities, and when planning their entrepreneurial activities, entrepreneurs could take into account the advantages of usufruct over traditional ownership. Establishing the right of usufruct instead of concluding a sales contract in order to acquire the right of ownership of real estate can significantly reduce business costs for an entrepreneur, because the establishment of usufruct is considerably cheaper than acquiring ownership of real estate and, as a rule, it is established for a longer period of time. One should also take into account the current situation of extremely high real estate prices, especially in the coastal part of the Republic of Croatia, which is why the difference in the price of property rights and usufruct appears to be even greater, in favor of usufruct. Furthermore, in the case of usufruct, the owner of the servient thing can exercise his right of ownership only in a way that does not interfere with the usufructuary's right, and is obliged to sustain the exercise of the usufructuary's powers over his thing. This fact enables the entrepreneur to operate smoothly. On the other hand, usufruct could also be used as a substitute for lease contract. This is not a widespread practice in Croatia, but there is no real obstacle to the greater use of usufruct in business. (Topić, 2021., p. 92.) In relation to the contract for the lease of business premises, the usufruct provides greater legal security to the usufructuary, due to the registration of the usufruct as an encumbrance of the servient real estate in the land register. The lease agreement is, along with the sales (purchase) agreement, probably one of the most common contracts that appear in practice. (Kontrec, 2016., p. 645.) In most cases it is the rights in rem that are entered in the land register, but obligations can also be entered in the land register. In Article 31., paragraph 1., of the ZZK stipulates that the subject of registration and pre-registration, as book entries, is the right of ownership and other rights in rem, the right of repurchase, first purchase, lease, lease and concession, as well as other rights on real estate for which this is provided by a special law allowed. While the registration of the lease of business premises is possible, it is rare in practice, although the registration of the right of lease guarantees greater legal certainty to the entrepreneur. Obligatory rights that are entered in the land register, namely, upon entry, acquire absolute effect (*erga omnes*), and no longer operate only between contracting parties (*inter partes*). However, once the mandatory rights have been registered in the land register, all the principles of land register law apply to them. This means that after the mandatory rights are entered in the land register, then no one can claim that they did not know, nor could they have known, that such rights exist on the property. (Kontrec, 2016., p. 678.) With the lease agreement of business premises, according to the provision of Article 1.9 of the Law on the Leasing and Purchase of Business Premises (hereinafter: ZZIKPP), the lessee is not authorized to sublease the business premises or part of the premises, while in the case of usufructuary, the usufructuary is legally authorized to leave the exercise of his powers to another person, for which he does not need anyone's consent. In the case of usufruct, generally, the owner has less authority and influence in relation to the usufructuary than in the case of lessor and lessee in a business lease contract.

5. CONCLUSION

The right of usufruct is regulated by the Civil Code, which defines it as a personal easement that authorizes its holder to use someone else's property in every sense. Usufructuary can exist on a servient thing that is non-consumable, either movable or immovable.

The usufructuary is authorized to use the servient thing in accordance with its purpose, to own it as a non-independent owner, and the net income from the value of that thing is also his, but all this only within the limits of preserving coexistence, which includes preserving the fundamental purpose of the servient thing. The owner of the servient thing must suffer the exercise of the usufructuary's powers on his thing, and he may exercise his right of ownership only if he does not thereby violate the usufructuary's right. We believe that the right of usufruct, in our business practice in particular, could and should be used more, because it simplifies and lowers the cost of doing business, especially if we compare it with common contractual relationships in practice, such as, for example, the lease of business premises agreement. Usufructuary, namely, provides the holder with greater legal security due to the obligation to register the right in the land register (registration of the lease is also possible, but rarely used). Also, usufructuary's rights are less often violated than in the case of a traditional tenancy relationship. The usufructuary can leave the execution of his powers to another person by legal act and he does not need consent for this. This is a big advantage over the lessee rights in the lease agreement. The usufructuary has the right to withhold benefits from servient things, such as natural and civil fruits (for example, rent or interest), which is not the case with the lessee. The right of usufruct as a form of personal servitude continues to play an important role in modern civil law. In contrast to real servitudes, whose role is far less than the one they had in Roman law and whose place, except outside cities, was replaced by administrative regulations, personal servitudes retained their role in everyday practice. (Gavella, 2007., p. 7.)

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THE EUROPEAN SUSTAINABLE FINANCE MARKET – DEVELOPMENTS AND TRENDS

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ABSTRACT

During the last decade sustainable finance has turned from a rare and unknown terrain into a well-established part of the financial markets with a growing array of instruments, called to help for the green transition of the economies. This is linked with the conviction that the financial markets can play an important role in the process by redirecting the capital flows to environmentally friendly uses. In that time Europe appeared to be a leader in terms of volume on some segments of the market but also in terms of standard setting and regulatory approaches, which corresponds to the level of ambition of the continent to be the first climate neutral one by 2050. In this respect, the paper aims to present the latest developments on the European sustainable finance market, namely the market for green bonds, social bonds, sustainable bonds, and sustainability-linked bonds. We try to identify the key trends, as well as the contributory factors and the challenges. Where appropriate, we make comparisons to other leading countries and regions. The paper starts by looking at the sustainable finance framework of the European Union and its main pillars, i.e. the EU Taxonomy, the Green Bond Standard, the disclosure requirements, and the climate benchmarks. The next chapter reveals the developments on markets for different sustainable finance instruments by presenting empirical data and we try to identify trends. In the final part we try to draw some conclusions about the extent to which the developments on the sustainable finance market have contributed for the achievement of certain goals in terms of climate change mitigation and adaptation.

Keywords: *climate change, green bonds, sustainable finance*

1. INTRODUCTION

The European Union (EU) undertook a strategic policy regarding green transition and sustainable finance in response to the United Nations' 2030 Agenda for Sustainable Development and the Paris Agreement and in addressing the threat of climate change. The European Green Deal of 2020 gave a boost to innovative approach for sustainable and green finance with focus on mobilizing financial public and private resources to climate-resilient and green economy. The scale of the global challenge as well as the level of ambition of Europe to be the first climate-neutral continent comes along with the awareness of the amount of the resources needed and the realization that the financial markets should play a vital role in the transformation of the economies by redirecting the capital flows to environmentally friendly uses. Not surprisingly, as if to justify its greater ambitions, the EU for a comparatively short period of time turned into a global leader in terms of volume on some segments of the sustainable finance market but also in terms of standard setting and regulatory approaches.

Further to that, the study focuses on the European sustainable finance market, the evolution of sustainable finance instruments like green bonds and their role to make the EU climate-neutral and sustainable economy. The EU sustainable finance regulatory framework has been discussed in the first chapter of the paper. We look at the main pillars of that framework and try to assess the work done so far. The second chapter reveals the evolution and trends in the sustainable finance markets through a range of different debt instruments, with an emphasis on green bonds, being the most important one. We try to identify the factors that have contributed to the development of the sustainable finance market in Europe and the leading role the EU has. In the end of the paper we derive conclusions.

2. THE EU SUSTAINABLE FINANCE FRAMEWORK

The EU sustainable finance framework is the foundation that allows the financial system to play its important role in the green transition of the EU economy by redirecting the financial flows to environmentally friendly uses and projects. The building of this framework started in 2018 when the European Commission presented its Action Plan on Sustainable Finance. The action plan was influenced by the recommendations of the High-level Expert Group on Sustainable finance. The action plan lays down the strategy of the European Commission for the development of sustainable finance framework and puts forward the main pillars of this strategy, namely the EU taxonomy, the disclosure requirements and a set of tools that enable market participants to take advantage of the sustainable finance market like green bond (GB) standard, benchmarks, labels etc. The Action Plans contain ten measures, directed at achieving three broad objectives – redirecting capital flows, better incorporation of sustainability into the risk management and promoting transparency and long termism. We would see the EU building the elements articulated in the Action plan step by step in the next few years and currently the main pillars of the framework are operational. Later in 2021 the EU strategy was updated to reflect the new challenges and knowledge accumulated after the adoption of the initial plan. Nevertheless, the Action plan is the main document, based on which the EU sets the building blocks of its sustainable finance framework. The EU taxonomy is the first pillar of this framework. It is a clear and comprehensive classification of sustainable economic activities. The adoption of the Taxonomy Regulation in 2020 makes clear for the whole EU which projects and activities are environmentally friendly and which are not and thus making sustainable finance more transparent and discouraging greenwashing. It sets a solid foundation for the development of the other pillars of the framework. The EU taxonomy is constantly developing since its inception as new economic activities are added and new economic sectors are included to allow the businesses to actively participate in the green transition of the economy. The next pillar of the framework concerns the disclosure of sustainability related information. The legal basis of disclosures is laid down in the Sustainable Finance Disclosure Regulation (SDFR) in force since 2021 and Corporate Sustainability Reporting Directive (CSRD) in force since 2023. The first imposes obligations on financial market participants and financial advisers to disclose sustainability information on entity and on a product level. The latter strengthens the rules for disclosure of information by businesses, requiring all large and listed companies to disclose information about how their activity influences the environment and people (impact materiality) and on the other hand, how environmental and social factors affect their finances (financial materiality). The third pillar of the framework is represented by the different tools that enable financial market participants to easily distinguish between green and non-green products, such as the green bonds, climate benchmarks, labels etc. We are going to emphasize here on the green bond standard, because of its significance. The EU Green Bond Standard is the first public, although voluntary standard for green bonds which was established with a Regulation in the end of 2023, and which will apply starting in December 2024. Prior to that the industry was dominated by two private, industry-led standards.

It will allow issuers and investors to issue and respectively invest in bonds, bearing the EUGB label once the requirements of the standard are met. As per the standard, 85% of the proceeds should be allocated to economic activities aligned with the EU Taxonomy and provides for 15% “flexibility pocket”, allowing allocation to activities, not covered by the taxonomy. The other requirements pertain to transparency and the need for an external review, as the external reviewers will be subject to the supervision of the European Securities Market Authority. In a similar vein, the European Banking Authority suggested a similar standard to be established for EU Green Loans. Overall, it can be stated that for a relatively short period of time the EU did a big amount of work as it adopted the main building blocks of the sustainable finance framework and thus became the first region with a comprehensive set of rules in this area, uniform for all EU countries. They will give impetus to the further development of the sustainable finance market by increasing transparency, reducing greenwashing, and installing confidence in investors. This will enable Europe to meet its ambitious environmental obligations. For example, the EUGB standard is expected to bring short- and long-term benefits for both issuers and investors. For issuers, complying with the standard can be associated with lower cost of capital (because of the perceived greenium), access to a larger investor base and lower transition risks through four channels – signaling seriousness, credible capex pipelines, green asset delivery and governance¹. The investors will benefit from the increased transparency and credibility. At the same time the rules imposed represent a burden for the businesses, which may compromise the cost-effectiveness and competitiveness of EU businesses. The EUGB standard will impose additional costs to issuers and create challenges in meeting compliance with the standard, as its rules are more prescriptive and stringent than that of the private, industry-based standards. The same applies for the disclosure requirements. As far as corporates are concerned, the new CSRD strengthens the rules compared to the previous directive and enlarges the scope of entities that are subject to disclosure. According to the directive of 2014, about 11,700 companies that are public and have more than 500 employees had such obligations. The new CSRD applies to all listed companies, as well as those with more than 250 employees, a turnover of more than EUR 40 million or total assets of more than EUR 20 million (meeting two of the three criteria), which results in 50000 companies that will be affected by the rules. Recognizing the increased administrative and cost burden in February 2024 the EU legislators decided to postpone the implementation of the directive for June 2026 for non-EU companies and for certain economic sectors, which is two years ahead of the initial schedule. This move is in line with the decision of the Commission to reduce the administrative burden by 25% and streamline reporting obligations, without compromising policy objectives, given the global competitiveness of the EU is an important objective as well². In case the EU ambitious rule making is not matched by a certain move in other jurisdictions, the competitiveness of the European business can really be sacrificed. Therefore, the EU, through the International Platform on Sustainable Finance works also on achieving a global regulatory convergence in respect to sustainable finance. In the case of sustainable reporting, an important move towards convergence is the work of the US’ Securities and Exchange Commission on rules for ESG reporting, starting with 2021 review of guidance for public companies’ disclosures of climate risks and the 2023 enhancement of rules. Similar moves can be observed in Asia, especially in Singapore and China, although they are less advanced (*Morot, P., 2022*)³.

¹ Leung, K. (2024). Will Europe’s New Standard Help or Hinder Green Bond Market Growth? Institute for Energy Economics and Financial Analysis, February 2024.

² Long-term competitiveness of the EU: looking beyond 2030, Communication from the Commission to the European Parliament, the Council, The European Economic and Social Committee and the Committee of the Regions, March 16, 2023, Brussels.

³ Morot, P., (2022). Convergence of Sustainability Reporting Standards: Challenges for Europe, Eurofi Regulatory Update, February 2022.

On a global level the establishment of the International Sustainability Standards Board in 2021 with an objective to develop global standards for sustainability disclosures represents a big leap. The authors' opinion is that the EU sustainable finance framework created the necessary minimum foundation for the further development of a market that is already exiting its nascent stage. It established uniform rules for the whole EU that will contribute to the trust of the investors and establish a level-playing field for issuers. Whether this regulatory advancement will come with a compromise of competitiveness or not as the market matures depends on the ability of EU lawmakers to respond flexibly to the emerging realities and on the future actions of the other jurisdictions.

3. INSIGHTS IN GREEN, SOCIAL, SUSTAINABILITY AND SUSTAINABILITY-LINKED (GSSS) BONDS DEVELOPMENT IN EUROPE – EVOLUTON AND PROGRESS

The Paris Agreement is a global commitment to make an economic and environmental transition. Achieving a transition to a sustainable and resource-efficient economy requires huge private and public resources that could be ensured by appropriate financial mechanisms and products as stated in *Salman et al. (2022)*⁴, *Yadav et al. (2023)*⁵ and *Tiron-Tudor et al. (2021)*⁶. Under the umbrella of sustainable finance fall different types of debt instruments such as sustainable, green, social, and sustainability-linked bonds and others. The main difference between these types of bonds is the targets of the use of the proceeds. The proceeds of the green bonds are dedicated to renewable energy, energy efficiency, clean transportation, green infrastructure, wastewater management and climate change mitigation and adaptation (*Flammer, 2020*)⁷. Social bonds finance social projects and the social consequences of the Covid19 pandemic. Sustainability bonds covered investment solutions refer to targets of the green and social issuance. The sustainable and green bonds issues have emerged as a potential financial source for combating with the climate change and for achieving a low carbon economy with net-zero greenhouse emissions in Europe by 2050.

3.1. Recent trends in green, social, sustainability, and sustainability-linked bonds (GSSSBs) market worldwide and in Europe

Globally, the GSSSBs issuance growth aims filling the public gap for funding transition to green and sustainable economy. The cumulative (2006-2023) volume of green, social, sustainability, and sustainability-linked bonds recorded USD 4,9 tn. (*World Bank, 2024*). The GSSSBs volume issuance reached \$939 billion in 2023 and it is close to the highest record of USD \$1.1 trillion issued in 2021. Globally, the volume of the green bond dominated in the capital markets, as the share of the green bond in total GSSSBs is 69%. On the other hand, the sustainability-linked bonds account for the smallest share of the market (3%) in 2023. The sustainability and social bonds rank second and third, respectively, in terms of share of the GBSSBs market. The volume of the GSSSBs almost double in 2023 compared to 2019.

Figure following on the next page

⁴ Salman, M., Long, X., Wang, G. and Zha, D. (2022). Paris climate agreement and global environmental efficiency: new evidence from fuzzy regression discontinuity design. *Energy Policy*, Volume 168. September 2022. Elsevier.

⁵ Yadav, M., Mishra, N. and Ashok, Sh. (2023). Dynamic connectedness of green bond with financial markets of European countries under OECD economies. *Economic Change and Restructuring*, Vol. 56. pp. 609-631. Springer.

⁶ Tiron-Tudor, A., Cristina, S., and Dan, A. (2021). The Determinants of the municipal market in Romania. *Transylvanian Review of Administrative Sciences* 17, pp. 175–92.

⁷ Flammer, C. (2020). Corporate Green Bonds. *Journal of financial economics*. April 2020.

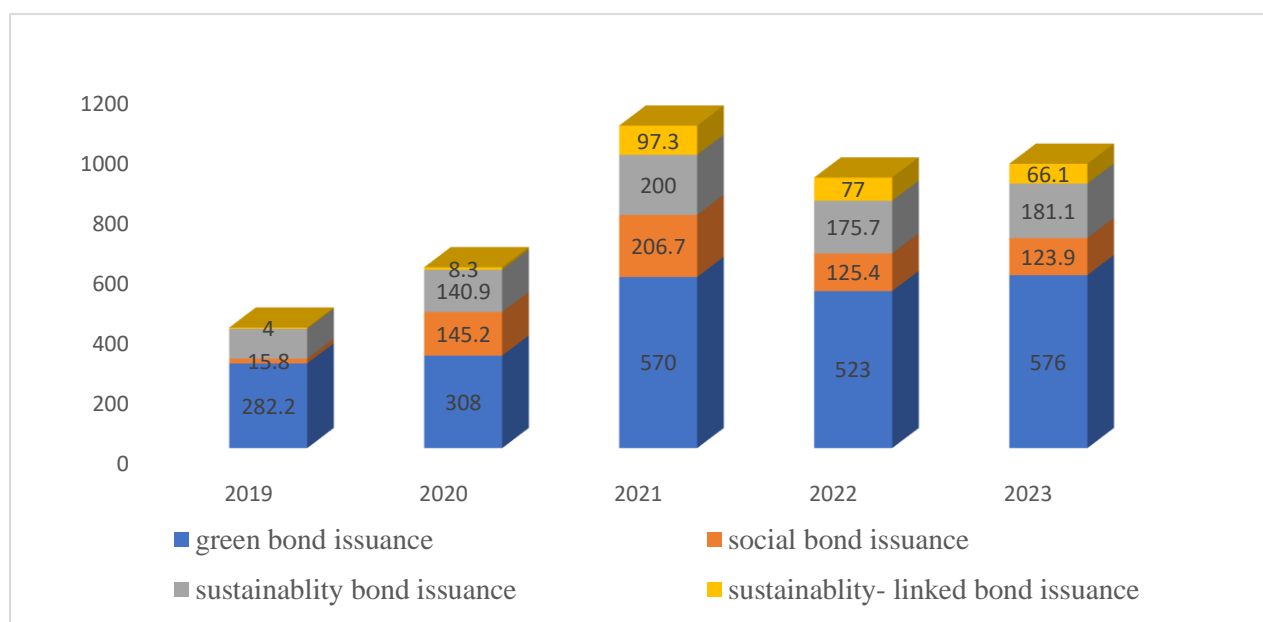


Figure 1: Development GSSS bonds issuance worldwide (\$ bn)
 (Source: International Capital Market Association (ICMA))

The incessant growth of the market from its inception in 2007 till now is determined by the constant increase of importance of the environmental, social and governance (ESG) factors for both issuers and investors. The investors' demand for the different types of the GSSSBs is defined by the objectives and how well the investments match with the needs for green and sustainable investments. The environmental, social and governance factors increasingly impact on the transformation of the issuers' business strategies to use proceeds for reduction of carbon emissions and climate change mitigation and adaptation. Given the ongoing restructuring of the mining, cement, steel, and chemicals and energy industries and their replacement with clean green and environmentally friendly technologies in Europe, there is no doubt this will continue to determine the upward trend in the sustainable and green bond market in the future. The World Bank estimated that the sovereign issuance accounted for 31% (USD 1.5 tn.) of the total amount of GSSS bonds issued cumulatively up to 2023. Most of the governments preferred issuance in green bonds. The sovereign green bonds presented approximately 80% and sustainability bonds 12% of the total GSSSBs issuance in 2023. The advanced developed countries have contributed with 30% to the overall GSSSBs issuance. Additionally, the *World Bank (2023)* estimated that high-income countries offer 78% of the total GSSSB issuance at global level. The advanced developed countries, compared to low-income countries, have a greater capacity to cover their financial needs for climate and environmental projects and to deal with greater corporate and fiscal debt in the future. The value of green bonds issued has reached USD \$576 bn., largely due to increased volume of sovereign and corporate bonds in Europe since 2020. The European issuers provide 52% of the GSSSBs issued worldwide. The EU countries have financed the economic and social consequences of the Covid -19 pandemic and the restructuring of the main economic sectors to reduce carbon emissions. Out of the sovereigns we must point out France that stands out with its large value of issued sovereign green bonds (USD 200 bn.). According to International Capital Markets Association (ICMA) data for 2023 the main supranational issuers of the GSSSBs are International Bank for Reconstruction and Development (USD 292,2 bn.), followed by EU (USD117,5 bn.) and European Investment Bank (USD 90,0 bn.)⁸. The corporate sector issuance amounted to 49 % of the GSSS bonds market and represent half of the volumes outstanding in 2023.

⁸ ICMA database

The corporate sustainable bond market strongly follows sovereign ones and has similar growth trend. However, the dynamic of GSSS bonds volumes is in line with global macroeconomic situation. The decline in economic growth and inflation led to a certain slump in bond issues, in particular, there is a decrease in social bonds, but the growth of green bond issues is relatively stable. *Yadav et al. (2023)* find that green bonds constitute a significant part of active trades in capital markets worldwide due to the advantages that green bonds offer.

3.2. Green bond market development in Europe

Green bonds are comparatively new tools that facilitate the green transition by ensuring private investments from the capital markets. International Capital Market Association (*ICMA, 2018*) defines green bonds as “any bond instrument where the proceeds will be exclusively applied to finance or refinance, in part or full, to new or existing eligible green projects. *Tolliver et al. (2020)*⁹ pointed out the green bonds as a new financial instrument for decarbonization and for application of the Paris Agreement goals. The Climate Bond initiative shows that the cumulative issuance of the green bond has reached USD \$3,03 tn. up to 2023.

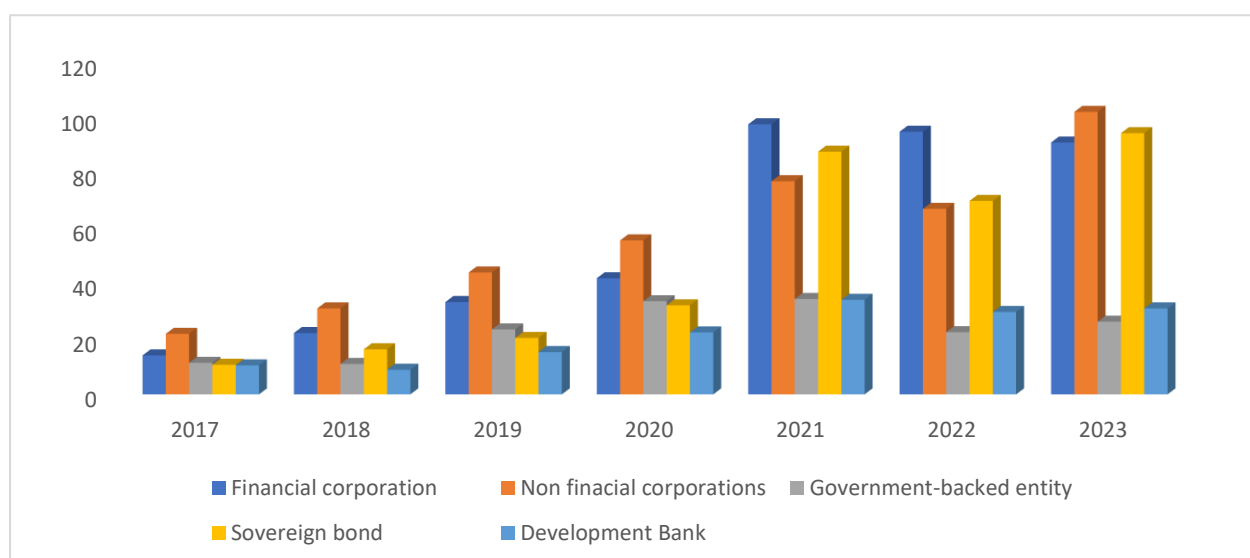


Figure 2: Type of green bond issuers in Europe (\$ bn.)
 (Source: Climate Bond Initiative, 2023)

Since 2019 the volume of the green bonds grows constantly but moderately after the Covid -19 pandemic and the subsequent economic crisis. Nevertheless, the European green bond market recovered rapidly, and the green bonds continue supporting the climate-smart and sustainable investment. The green bond market has developed and expanded gradually, and this is due to corporations and investment to climate change and environment and investment funds that are socially responsible towards climate change and environment. The European green bonds issuance accounted for 45% of the global green bond issuance in 2023. The non-financial corporations provide a large portion of the green bonds in the European markets. The green bond issuance by financial corporations made up 30% of total green issuance, while non-financial enterprises made up 38% respectively. An upward trend in the volume of green bonds issued by financial and non-financial entities can be established. In Europe, the green bond market started with the first issue of the Climate Awareness Bond (CAB) by European Investment Bank in 2007.

⁹ Tolliver, C., Keeley A., Managi Sh. (2020). Drivers of green bond market growth: the importance of nationally determined contributions to the Paris agreement and implications for sustainability. *Journal of Cleaner Production Vol. 244*. Elsevier.

The green bond market has developed and expanded fast because of social responsibility towards climate change and environment of corporations and investment funds. The first sovereign green bond issuance was delivered by Polish government in 2016 and since then the sovereign green bonds have continued to grow in Europe. The European sovereign green bond issuance reached USD 94,5 bn. in 2023. The amount of sovereign green bonds is 35% higher in 2023 than the previous year. In 2022 the leading EU countries in terms of the value of green bonds issued are Germany (\$ 61,2 billion), Netherlands (\$26,7 billion), France (\$24,8 billion), Spain (USD15,1 billion) and Italy (USD14,9 billion) as per *Statista (2022)*. Seven EU member countries did not issue green bonds, but a large sovereign green bond issuance was offered on the capital market by Slovakia, Sweden, Austria, Belgium, and Hungary in 2022. A serious impetus to the market development was given in 2021 when the European Commission issued its first green bond under the Next Generation EU package, which was 12 billion 15-year bond, the largest to date green bond transaction that turned EU as the biggest supranational issuer. The Commission's green package imposed the countries to spend capital for restructuring their economies and to develop new green productive activities. The demand for green bonds increased because of financing the ambitious environmental and climate objectives. The European Investment Bank (EIB) worked with the European Commission to provide needed capital flows towards investments in sustainable and green economic activities. The EU Treaty enables the European Commission to raise funding from international capital markets. The European Commission's plan to issue green bonds amounted to EUR 250 billion to meet the funding needs of the EU economic recovery and Next Generation EU program to 2026. The needed capital amounted to EUR190,6 bn, stems from the green bond's sale. The collected money will be used for covering the expenditures included in Member States' Recovery and Resilience Plans. Up to March 2024, the EU has accumulated investments of EUR59,9 bn. but the green bond issuance is below the funding target required to the Next Generation EU. The EU and the EIB have committed to funding the green transition through green bonds and this made the EU and EIB key issuers of green, social and sustainability bonds on the global sustainable finance market. The EU green bonds are issued to fund activities that will bring benefits to the environment and thus in combating climate change. The green bond revenues have seen steady growth and the most of the green bond proceeds have been allocated to energy (24,2%), clean transport (34%) and energy efficiency (28,9%) and less for water management, biodiversity and climate change mitigation and adaptation (*Climate Bond Initiative, 2023*). The green bonds issued by the EU Commission play a very important role for the development of the sustainable finance market in Europe and globally, providing quality assets for investors, strengthening the role of the euro and Europe on capital markets, and confirming the serious EU commitments regarding climate change. Following the presented information on the regulatory aspects and market developments and trends some factors that affect the green bond issuance in Europe can be derived. First, we can emphasize on the legal framework of sustainable and green finance as an important factor for the development of the EU sustainable finance market and its leading position on the global terrain. The EU taxonomy, the disclosure requirements and the European Green Bond Standard all make up the framework that should serve as a basis for further development in Europe and as a model for regulatory approach in other geographical regions. The adoption of these essential rules makes to some extent the green and sustainable bond market transparent, credible and increase information efficiency. EU green and ecological standards would force the integration of the investors with ESG considerations to the capital market and create the trust between the issuers and the investors, as well. Another contributing factor relates to the fact that most of the stock exchange markets in Europe have established segments for green and sustainable bonds trade, where ESG investing and transaction transparency are followed.

The listing of the bonds' issuers on the official stock exchange markets ensures liquidity of the investments and certainty for institutional investors. The pecuniary incentives should not be neglected as a factor contributing to the development of the market as well. Although the research on green bonds is not entirely unanimous about the existence of a greenium, some studies conclude that a small greenium exists. This means that the investors are willing to pay a higher price in comparison to the traditional bonds and accept a lower yield in exchange for perceived environmental benefits. The greenium also suggests that issuers of green bonds can raise the required funds at an advantage. One plausible explanation for these findings is that the demand for green bonds has exceeded the supply, which has been driving the green bonds prices to increase and thus contributing to the existence of greenium. Macroeconomic stability, economic growth, interest rates, inflation rates, EU monetary policy etc. impact the volume and value of the sustainable and green bonds and respectively, on the investor demand. Higher interest rates raise the cost of green and sustainable investments, and it can slow down the green transition. Geopolitical uncertainties (Ukraine war and other unforeseen external events) also create risks and exert influence on the sustainable and green bond market. Last, but not least, investors' and issuers' awareness of climate change and environmental risk and their motivation to invest to tackle climate change should also be considered as important determinants of market developments. One possible measure of how effective sustainable finance instruments and especially green bonds are in combating climate change is whether they produce the expected results, i.e. if they contribute to achieving ecological objectives. The empirical literature is not entirely conclusive as to whether green bonds contribute to the decrease of greenhouse gas emissions or energy efficiency. There is not enough comprehensive and granular data to allow such research. And it takes time so that the changes in the financial markets produce the desired results regarding climate change. Despite that the data shows that along with the constant increase in issuance of green bonds in the EU from 2007 till 2022, the net greenhouse gas emissions are 22% down, as can be seen in the figure below. The pace of decrease has intensified after the global initiatives in 2015 and especially during COVID 19 crises. The Eurostat data shows that in the previous decade the reduction was half less.

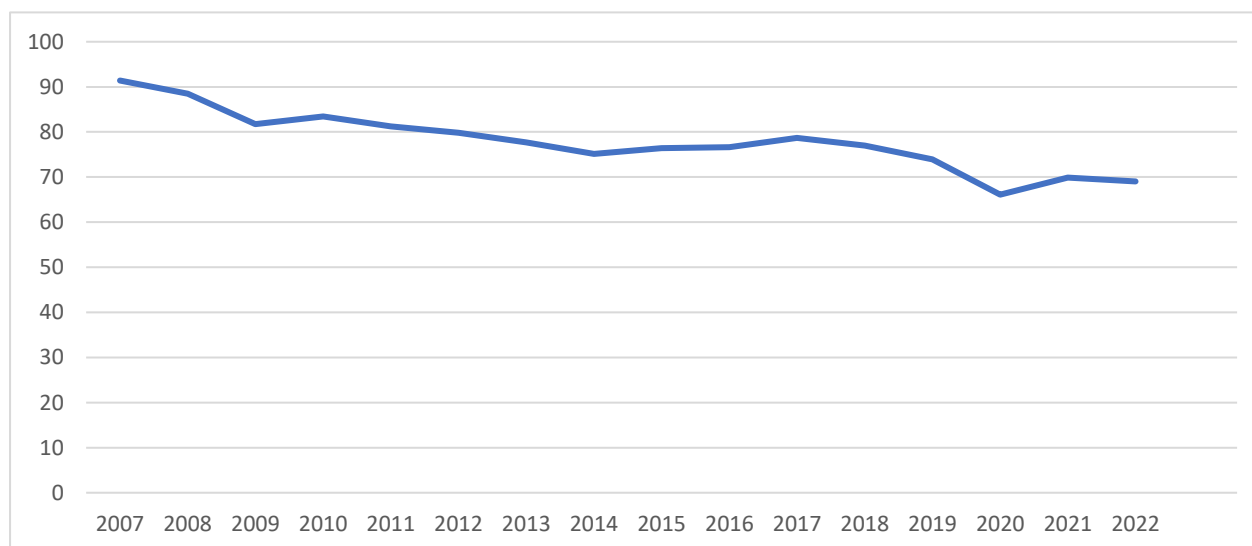


Figure 3: Net GHG emissions in EU 27 in 2007-2022 (Index, 1990=100)
 (Source: Eurostat)

As there are many factors that can contribute to these results, we may not say what is the exact contribution of the green bonds, but there is no doubt that sustainable finance has played a role in that trend.

4. CONCLUSIONS

Since its inception in 2007 the sustainable finance market has seen significant growth and from rare and exotic, sustainable debt instruments have turned into well-known products on the financial markets, especially green bonds. A serious boost to the market development was given in 2015 after the global consensus on the need for prompt action against climate change emerged and the Paris Climate Agreement and the United Nations Sustainable Development Goals were agreed. To respond to the global challenge, in Europe, the European Commission for a relatively short period of time did an enormous work and adopted the main building blocks of the sustainable finance framework and thus became the first region with a comprehensive set of rules in this area, uniform for all EU countries. Further on, the European Green Deal signaled and reconfirmed the ambition of the European continent to be the first climate neutral one by 2050. The EU legal framework along with strategic documents and programs have ensured accumulation of private and public investments through capital markets. The issuance of corporate green bonds still represents a small part of the overall EU corporate bond market, but their steady growth indicates a growing investors' interest in sustainable investment options. The increasing demand to sustainable and green investments has been driven by the need to fund transition to low carbon economy and execution the EU Green Deal objectives. Not surprisingly, due to those developments and commitments, the EU has turned into a global leader on the sustainable finance market. The dynamics of the green bond market showed its dependence on the growth of the European economy and on the speed of its recovery from the COVID-19 pandemic. The national and European green bond markets develop rapidly, and their maturity depends on many factors, such as governmental and EU level policy, legal framework, macroeconomic situation, investor interests and others. The sovereign and corporate green issuance present a largest share of the European green bond market. The majority green bond issues in Europe came from European Investment Bank and advanced developed EU member countries – Germany, France, Netherlands, Italy, and Spain. The issuance of green bonds by the European commission under the Next Generation EU gives additional, solid impetus and reconfirms the climate ambitions of Europe and its position on the capital markets. The future developments and the role that the EU will play on the sustainable finance market will depend on the ability of European policy makers to strike the right balance between regulation and effectiveness and on the approaches the other main jurisdictions will adopt, following the EU example.

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BUILDING SUSTAINABLE DEVELOPMENT OF THE METALLURGICAL COMPANIES IN SLOVAKIA

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ABSTRACT

In recent years, the requirement for sustainable development has become increasingly important and industries around the world face the key challenge of reconciling economic growth with environmental protection and social responsibility. This commitment is particularly pronounced in sectors with a significant environmental footprint, such as the metallurgical industry. The aim of this paper was to identify sustainable development that seeks to maximise value in the economic, social and environmental spheres, while responding to the Sustainable Development Goals in terms of literary and quantitative analysis. Literature analysis was conducted through foreign and domestic research articles, academic articles and studies. The quantitative analysis was conducted through an electronic questionnaire in 41 companies based in the Slovakia that operate in the metallurgical industry. Metallurgical processes involve resource intensive activities with significant environmental impacts, which require careful management to mitigate adverse effects. Sustainable development strategies in this sector involve a multifaceted approach that addresses environmental concerns such as emissions reduction, resource efficiency and waste management, while incorporating social responsibility initiatives and competitiveness considerations. Effective management practices in the metallurgical industry in Slovakia include the introduction of innovative technologies, the adoption of circular economy principles, cooperation with stakeholders and compliance with regulatory standards. Sustainability management provides valuable insights for metallurgical companies in Slovakia that are trying to navigate the challenging environment of meeting the Sustainable Development Goals.

Keywords: *Sustainability, Sustainable Development, Sustainable Development Goals, Metallurgical Industry*

1. INTRODUCTION

The development of contemporary industrial systems and persistent population expansion have brought to light issues like the depletion of environmental quality and the scarcity of resources on a worldwide scale. Thus, one of the main goals of sustainable development is now resource efficiency. Metallurgy is an important component of national economies and the cornerstone of sustainable development on a worldwide scale. It also propels a number of associated industries, including shipbuilding, aircraft, heavy engineering, transportation, the defence sector, energy,

and construction. The metallurgical sector also contributes to environmental issues by generating waste that contaminates nearby soil, wastewater, and hazardous emissions into the atmosphere. Degradation and a change in land quality follow the extraction of ferrous and non-ferrous metals (Lavrenenko et al., 2021). There is a lot of activity going on in the world to identify ways for recovering metallurgical wastes. Their application is motivated by the desire to eliminate metallurgical waste heaps as well as economic and environmental factors. Creating a sustainable system cycle that can transform all the precious resources that are disposed of as waste into goods that are useful is the ideal objective. Owing to the vast amounts of metallurgical waste and the more stringent regulations governing the environment, recycling and using these wastes is a desirable substitute that will eventually reduce disposal costs, lessen pollution of the soil, air, and water, and preserve natural resources (Iluțiu-Varvara & Aciu, 2022). With reference to the Sustainable Development Goals the objective of this paper was to identify sustainable development that aims to maximise value in the economic, social, and environmental domains. The literature analysis was carried out using academic articles, research articles, and studies from both domestic and international sources. The quantitative analysis was carried out using an electronic questionnaire in 41 Slovakia based metallurgical companies.

2. THEORETICAL BACKGROUND

Sustainability in the context of the environment refers to not overloading the ecosystem and maintaining the natural support system for life. From the perspective of society, sustainability means that people are the primary focus of attention. The greatest possible degree of equality, freedom, social justice, and security must be offered, especially in light of the global population growth (Zodape et al., 2015). Sustainability refers to achieving our goals without affecting the capacity of coming generations to achieve their goals. We require social and economic resources in addition to natural resources. Environmentalism is only one aspect of sustainability. Most definitions of sustainability include considerations for social fairness, and economic development, particularly growth that meets current demands without compromising the capacity of future generations to meet their own. This is a well-known example of sustainable development (University of Alberta, 2013). Sustainability is the complete plan of ethical action for an organization which is attempting to transform itself into sustainable, i.e. to become pro-environmental, pro-social, and traditional pro-economic (John & Gopalakrishnan, 2015). The concept of sustainable development attempts to combine growing concerns about a range of environmental issues with socio-economic issues (Hopwood et al., 2005). Aiming for long-term prosperity and the well-being of all people, sustainable development is the balance between the economic, social, and environmental spheres. It includes cutting back on greenhouse gas emissions, protecting the environment, fostering social inclusion, upholding human rights, and building sustainable institutions and infrastructure. This international project is in line with the Sustainable Development Goals of the United Nations (Boluk et al., 2019). The idea of social development that respects the equilibrium of the three pillars-economic, social, and environmental-is known as sustainable development. The Triple Bottom Line (TBL) concept is the name given to the cornerstones of sustainable development. The scientific conclusions that the current state of society's evolution is not realistically sustainable in the long run led to the creation of the model. Nonetheless, a crucial aspect of the study involved the thorough examination and understanding of TBL (Høgevold et al., 2015). Countries from all over the world gathered in Paris in 2015 in an attempt to establish a framework with specific goals (the Sustainable Development Goals/SDGs) and make sure they are accomplished by 2030 (United Nations, 2015). The 17 interconnected Sustainable Development Goals (SDGs) are intended to provide a global framework for "peace and prosperity for people and planet now and in the future" (Năstasă et al., 2024).

The SDG goals are divided into three main categories or pillars: social, environmental and economic. Authors such as Yi & Thomas (2007) and Gavkalova et al. (2022) have pointed out that achieving the SDGs will require enterprises, the government, and society to come together and communicate effectively (Saura et al., 2022). The manufacturing sector has recently taken the lead in creating recyclable items and developing cleaner manufacturing techniques due to environmental concerns. Sustainable development is the aim, whereby waste from one process feeds into another in a massive cycle that mimics the natural food chain (Garetti & Taisch, 2011). We cannot ignore the fact that manufacturing has a significant negative environmental impact. The first significant factor is the consumption of raw materials and energy. New approaches to solving this conundrum have been made possible by the introduction of the notion of sustainable development, which is embodied in environmental, social, and corporate governance (ESG). The United Nations Global Compact suggested integrating ESG principles into investment decisions in 2004 to encourage businesses to pay more attention to environmental issues (Frost et al., 2022). The term "corporate sustainability" describes the management and leadership strategies a business uses to successfully pursue its social, environmental, and commercial goals all at the same time. According to Wang and Huang (2022) findings, in order to protect the company's interests, corporate executives must successfully convince all parties involved-including the community and themselves-to work towards a more competent future. The great interest that stakeholders have in the ethical culture of the organisation is the driving force behind the increasing emphasis in the business environment on the relationship between corporate sustainability and commercial performance (Zhu & Huang, 2023). In order to make stronger contributions to sustainable development, businesses are integrating the Sustainable Development Goals (SDGs) into their corporate strategy, according to the PwC 2018 report (Scott & McGill, 2018). The United Nations (UN) adopted the seventeen Sustainable Development Goals (SDGs) in 2015, and 191 countries signed on to the agenda for sustainable development. Policymakers, businesses, and society began implementing the UN-recommended road map to address issues related to environmental, social, and economic challenges. Nonetheless, since the SDGs were first announced, NGOs, governments, and international organizations have mostly committed to attaining them by releasing yearly reports. Numerous big businesses and multinational enterprises have also demonstrated how important it is to participate in the SDGs (Fidlerová et al., 2022).

3. METHODOLOGY

The aim of this paper was to identify sustainable development that seeks to maximise value in the economic, social and environmental spheres, while responding to the Sustainable Development Goals in terms of literary and quantitative analysis. Literature analysis was conducted through foreign and domestic research articles, academic articles and studies. The quantitative analysis was conducted through an electronic questionnaire in 41 companies based in the Slovakia that operate in the metallurgical industry. For the identification of companies in the quantitative analysis, the companies were categorised according to their size in accordance with the European Commission Directive (2003/361/EC), which divides companies into three categories: small companies (10-49 employees), medium-sized companies (50-249 employees) and large companies (≥ 250 employees). In the quantitative research 48.78 % of medium-sized metallurgical companies, 26.83 % of large metallurgical companies and 24.39 % of small metallurgical companies participated. The analysis found that metallurgical companies in Slovakia are dispersed unevenly according to the legal form of the company. Companies that reported the legal form of a limited liability company obtained a share of up to 70.73 %, while enterprises that reported the legal form of a joint stock company obtained a share of 29.27 %.

In identifying the research sample, the geographical location of companies in the metallurgy industry in Slovakia was also included in the analysis. The data indicate that the dominant position among the regions of Slovakia was held by metallurgical companies in the Banská Bystrica Region (26.82 %). The second highest share was held by metallurgical companies in the Košice Region (21.95 %). The third highest share of participation in the research was held by companies operating in the metallurgical industry in the Trnava Region (12.19 %). The same share of participation in the research was also observed in the surveyed companies from the Žilina and Nitra Regions (9.76%) and also from the Bratislava and Trenčín Regions (10.34%). Metallurgical companies from the Prešov Region participated in the research the least (8.62%).

4. RESULTS AND DISCUSSION

In this part of the paper, descriptive analysis was used to evaluate quantitative research that dealt with building sustainable development in companies of the metallurgical industry in Slovakia. The results of the analysis are presented in a frequency table. Table 1 shows that 58.54 % of metallurgical companies in Slovakia promote the view that sustainable development is important for their business activities. It is partially important for 36.58 % of the surveyed companies. Only 4.88 % of the respondents stated that sustainable development is not important for them.

Possibilities	Absolute Frequency	Relative Frequency
Important	24	58.54 %
Partially important	15	36.58 %
Not important	2	4.88 %
Total	41	100.00 %

*Table 1: Promoting sustainable development
 (Source: own elaboration)*

The surveyed companies were asked how long the company has been involved in sustainable development in its business activities. In the range of 5-10 years, the largest share of metallurgical companies (46.34 %) is engaged in sustainable development. 39.03 % of the surveyed companies have been involved in sustainable development for more than 10 years. In the range of 1-5 years, 12.19 % of the respondents are engaged in sustainable development. Metallurgical companies in Slovakia have been engaged in sustainable development for less than 1 year with a share of 2.44 %.

Possibilities	Absolute Frequency	Relative Frequency
5-10 years	19	46.34 %
More than 10 years	16	39.03 %
1-5 years	5	12.19 %
Less than 1 year	1	2.44 %
Total	41	100.00 %

*Table 2: Period of involvement in sustainable development
 (Source: own elaboration)*

In Slovakia, 48.78% of metallurgical companies support the Sustainable Development Goals. Of the total respondents 46.34 % support them partially. The SDGs are not supported by 4.88 % of the companies surveyed.

Possibilities	Absolute Frequency	Relative Frequency
Supporting the goals	20	48.78 %
Partially support the goals	19	46.34 %
Not supporting the goals	2	4.88 %
Total	41	100.00 %

*Table 3: Supporting the Sustainable Development Goals
 (Source: own elaboration)*

Further, the quantitative research investigated whether metallurgical companies have a sustainability strategy. Over 36 % of respondents have a sustainability strategy. 34.15 % of the companies surveyed have a partially formulated sustainability strategy. A sustainability strategy is under preparation by 24.39 % of metallurgical companies in Slovakia. Only 4.88 % of the respondents do not have a sustainability strategy in preparation.

Possibilities	Absolute Frequency	Relative Frequency
Strategy is implemented	15	36.58 %
Strategy is partially formulated	14	34.15 %
Strategy is under preparation	10	24.39 %
Strategy is not prepared	2	4.88 %
Total	41	100.00 %

*Table 4: Sustainability strategy
 (Source: own elaboration)*

The quantitative research shows that 48.78 % of the respondents prefer the environmental pillar in sustainable development. The results presented in Table 5 show that 41.46 % of the companies in the metallurgical industry in Slovakia prefer the social pillar. The summarised data in the table shows that the economic pillar within sustainable development is important for 9.76 % of the research participants.

Possibilities	Absolute Frequency	Relative Frequency
Environmental pillar	20	48.78 %
Social pillar	17	41.46 %
Economic pillar	4	9.76 %
Total	41	100.00 %

*Table 5: Pillars of sustainable development
 (Source: own elaboration)*

Based on Table 6, we can see the sustainability efforts in the companies of the metallurgical industry in Slovakia. The table shows that the first place was occupied by the use of environmental management, which is fundamental for compliance with legislation. This option was marked by 31.71 % of respondents in the questionnaire. The second place was occupied by the environmental management of the company influenced by the goals of sustainable development. Collaboration with stakeholders to reduce environmental impact throughout the chain was dominated by 21.95 % of respondents. More than 19% of companies surveyed said that sustainable development has a significant impact on business competitiveness.

Table following on the next page

Possibilities	Absolute Frequency	Relative Frequency
The use of environmental management is fundamental to compliance with legislation	13	31.71 %
The environmental management of a company is influenced by the Sustainable Development Goals	11	26.83 %
Collaboration with stakeholders to reduce environmental impacts throughout the value chain	9	21.95 %
Sustainable development significantly impacts business competitiveness	8	19.51 %
Total	41	100.00 %

*Table 6: Sustainable development efforts
 (Source: own elaboration)*

Table 7 summarises the absolute and relative frequencies of responses from the quantitative research. The responses of the companies indicate that 36.70 % of the respondents perceive sustainable development as the use of ISO 14001 certification. More than 24 % of the surveyed companies understand sustainable development as monitoring emissions and waste production. 21.95 % of the respondents consider sustainable development as a policy of procurement of environmentally friendly products. Purchased raw materials are reused and/or recycled by 14.63 % of the surveyed companies. The least number of surveyed companies perceive reducing transport costs as sustainable development (2.33 %).

Possibilities	Absolute Frequency	Relative Frequency
Use of ISO 14001 certification	13	36.70 %
Monitoring emissions and waste production	10	24.39 %
Procurement policy for environmentally friendly products	9	21.95 %
Purchased raw materials can be reused and/or recycled	6	14.63 %
Reduction of transport costs	3	2.33 %
Total	41	100.00 %

*Table 7: Identifying sustainable development
 (Source: own elaboration)*

Table 8 identifies the tools in the framework of sustainable development of metallurgical companies in Slovakia. According to the aggregated data, 29.27 % of respondents prefer Total Quality Environmental Management and 26.83 % of participants prefer sustainable production. More than 21 % of the participants prefer sustainable packaging in the framework of sustainable development. Among the sustainable development tools, 12.19 % of the surveyed companies prefer sustainable logistics. Respondents with a share of 9.76 % prefer Green public procurement among the tools.

Possibilities	Absolute Frequency	Relative Frequency
Total Quality Environmental Management	12	29.27 %
Sustainable manufacturing	11	26.83 %
Sustainable packaging	9	21.95 %
Sustainable logistics	5	12.19 %
Green public procurement	4	9.76 %
Total	41	100.00 %

*Table 8: Sustainable development tools
 (Source: own elaboration)*

An important part of the quantitative research was to identify the barriers to the implementation of sustainable development in metallurgical companies in Slovakia. Table 9 identifies that respondents consider the lack of financial resources as the biggest barrier. At the same time, more than 21 % of the respondents stated that there is a lack of support from the government in the implementation of sustainable development. Administrative complexity is considered as one of the barriers by 19.51 % of respondents. Lack of knowledge and information was the next rated barrier (17.07 %) for metallurgical companies in implementing sustainable development. Lack of interest from top management was the least barrier with 14.64 %.

Possibilities	Absolute Frequency	Relative Frequency
Lack of financial resources	11	26.83 %
Lack of government support	9	21.95 %
Administrative complexity	8	19.51 %
Lack of knowledge and information	7	17.07 %
Lack of interest from top management	6	14.64 %
Total	41	100.00 %

*Table 9: Barriers to implementing sustainable development
 (Source: own elaboration)*

5. CONCLUSION

Based on the quantitative research, it can be concluded that the findings underline the growing recognition and adoption of sustainable development practices in metallurgical companies in Slovakia. The majority of respondents recognise the importance of sustainable development for their business activities, with a significant proportion actively engaged in it in the 5-10 year range. In addition, metallurgical companies support the SDGs. At the same time, metallurgical companies have a sustainability strategy and prefer an environmental pillar within sustainable development. Environmental management emerges as a primary focus, reflecting both compliance with legislation and alignment with broader sustainability goals. Metallurgical companies perceive sustainable development as the use of ISO 14001 certification. Total Quality Environmental Management is preferred in the sustainable development of metallurgical enterprises in Slovakia. In implementing sustainable development, metallurgical companies in Slovakia consider the lack of financial resources as the biggest barrier. The Metallurgical industry, with its significant environmental footprint and societal impact, stands at a pivotal juncture where embracing sustainability is no longer an option but a necessity. From adopting cleaner production processes to enhancing resource efficiency and promoting responsible supply chain management, numerous pathways exist for companies to integrate sustainability into their operations. As we look to the future, it is clear that sustainability will increasingly shape the trajectory of the metallurgical industry. Companies that proactively embrace this transition stand to not only mitigate risks but also unlock new opportunities for growth, innovation, and value creation. By prioritising sustainability, the metallurgical industry can not only safeguard its own future but also contribute positively to broader societal and environmental goals, ensuring a more resilient and equitable future for generations to come.

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CREATING VALUE AND UTILITY FOR USERS OF DIGITAL PUBLIC SERVICES - ATTITUDES AND PERCEPTION OF CITIZENS

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ABSTRACT

The Digital Croatia Strategy until 2032 defines a priority goal related to the intensification of promotional activities of digital services and the development of customer support for citizens. The usefulness of products and services and their value is reflected in how much the users themselves use them and to what extent. The purpose and goal of this paper is to investigate the extent to which citizens use digital services of public services and which factors affect the assessment of their value and usefulness, which ultimately affects the perception of citizens' satisfaction with the services themselves. Also, through research, an effort is made to determine what would help citizens to use publicly available services more. After the theoretical part, the paper presents the results of the research conducted through a questionnaire, which aims to show and determine what affects the assessment of the quality of digital services and how past experiences affect the further use of services, about the frequency of use, and which elements could affect the satisfaction of needs and expectations of citizens in terms of greater value and usefulness of public services. Based on the analysis of the conducted research on the attitudes and perceptions of citizens about the values and usefulness of public services, recommendations for the implementation of promotional strategies to increase citizens' awareness of greater use of digital services of public services were given in the final part.

Keywords: digital public services, usefulness, perception, marketing strategies, value

1. INTRODUCTION

The development of technology and the new role of consumers has imposed the need for digitization in all areas, including products and services in the field of public services. The digitization of public services has been continuously implemented for a decade, and it started with the introduction of the e-citizen system in 2014. In the European Union, it started with the adoption of the Directive on services in the internal market with the aim of simpler and more accessible public administration, and for a decade the European Commission has been monitoring the progress of member countries in the digital field and presenting it through annual Reports on the Economic and Social Digitization Index (DESI). The report analyzes 4 main areas that are monitored for each of the member countries, which are related to: human capital, connectivity, integration of digital technology and digital public services. In the published report for the year 2022, Croatia is ranked 21st out of a total of 27 member states of the European Union according to the index of economic and social digitization. According to the areas to be monitored in 2022, we ranked: human capital 9th place, connectivity 24th place, digital technology integration 14th place and digital public services 23rd place. In the published report for the year 2023, the ranking of countries by overall level of digitization was abolished, but other areas are monitored. The report concluded that in 2023, Croatia has made significant progress in terms of digitization and infrastructure, but utilization limits greater progress. It is also necessary to speed up the development of digital skills, encourage the use of 5G technologies for connectivity, encourage greater digitization of companies and work on the development of digital public services. In the field of digital public services, it was concluded that although there is visible progress, we are still lagging behind the member states of the European Union, especially when it comes to digital public services for companies.

The recommendations that have been made are: adapt online public services to the user, develop customer support and strengthen efforts to increase investment in public procurement in the development, testing and implementation of innovative digital solutions. Digital marketing strategies that include the aforementioned recommendations are indispensable in the design of all elements that will ensure the use of digital public services to a greater extent and bring them closer to users through various forms of communication with individual target groups. Products and services in the digital environment have value and usefulness for users to the extent that they use and apply them in their daily activities. Ease of use, education, information, customer support, user experience and more are just some of the tools to bring services and their use closer to the end user. Optimizing the user experience should be included in the marketing strategy (Pranić, 2022). The aim of the work is to determine through survey research to what extent citizens use digital services of public services, and which factors affect the assessment of the value and usefulness of the services received, how they assess the quality of the service, what affects further use, and which marketing activities would affect greater use and fulfillment of expectations in terms of the value and usefulness of the services provided.

2. THEORETICAL BASIS AND LITERATURE REVIEW

The report on the Economic and Social Digitization Index (DESI) for 2023 concluded that Croatia has unused digital potential. Significant progress has been made, but work remains to be done to achieve the goals aligned with the Digital Decade Policy Agenda. With the digitalization of public administration, it becomes more available and accessible to citizens, efficiency, transparency and responsibility in work are achieved (Đanić Čeko & Guštin, 2022). New digital initiatives that will help achieve the goals are the Digital Croatia Strategy until 2032, the National Development Strategy until 2030 and the National Recovery and Resilience Plan (NPOO), which provided financial resources for implementation. In January 2023, the Digital Croatia Strategy until 2032 was adopted, which defined strategic goals for achieving digital and economically competitive companies and digitalized public administration with personalized services. The Digital Croatia Strategy until 2032 is based on the National Development Strategy, which also emphasizes the importance of digital infrastructure and digital solutions that are of interest to citizens and the economy. Strategic goal 2 refers to digitized public administration, and the priority areas of public policy implementation are:

- 1) strengthening organizational and human institutional capacities
- 2) upgrading of state information infrastructure and software solutions
- 3) achieving complete interoperability of public administration and judiciary while enabling access to open data for citizens and businesses
- 4) digitization of all key public administration services
- 5) promotion of digital services and customer support to citizens (Strategy of digital Croatia until 2032, 2023:11)

According to the Open Data Portal as of April 1, 2024, the number of unique users in the e-citizen system was 1.915.348 (the total number of different personal identification number who registered at least once for any of the e-services through the unique system). During 2021, the system was redesigned, which increased the number of unique users. Understanding user preferences, usage patterns, features and interconnections (Yang et al, 2019) influences the delivery of a positive user experience that is critical to growth, market share and greater efficiency (Elaine et al, 2023). The overall perception experience defines the user experience, and influences the user's reactions and behavior (Youngdoo & Wonjoon, 2023). Availability, simplicity, speed of use as well as security and trust are challenges in the application of digital technologies (Smojver & Jolić, 2020).

In order to create value for the user, it is important to follow his suggestions because success and creating value comes from understanding needs and desires and creating such products and services (Kotler et al, 2006). Satisfaction is a measure of received value and a component of long-term exchange (Vranešević, 2000). In order to increase the number of users of available public services and strengthen trust in public institutions, promotional activities and education on the use of services for citizens will be carried out. Digitization and development of services are only as successful as they are and to what extent they are used. Pavić-Rogošić and the authors (2022) state that the affordability of digital technologies is no longer questionable to a greater extent, as much as the motivation for using them is important, as well as the empowerment of older people for digital inclusion. Previšić et al. (2007) state that integrated marketing communication makes it possible to approach the target segment with a customized marketing message that results in greater effectiveness of promotional activities. Integrated marketing communication is the process of developing and applying different forms of persuasive communication with a different combination of communication contents, forms and media (Kesić, 2003). Pekas and authors (2023) state that it is extremely important to educate all groups of citizens about the advantages and ways of using e-services by emphasizing the benefits it offers while improving system efficiency, optimizing processes and user experience. The application of new technology achieves efficiency, effectiveness, but also transparency and openness (Kos, 2017).

3. METHODOLOGY

The methodology used in the work explains in more detail the purpose, goal and structure of the work. The first part of the paper presents the theoretical basis and literature review. The results of the research on the attitudes and perception of citizens about the value and usefulness of digital public services are presented in the third part of the paper, and refer to the research questions:

- 1) What factors affect the assessment of the quality of digital services?
- 2) Frequency of using digital services?
- 3) How to increase the value and usefulness and influence the satisfaction of citizens?
- 4) What elements would influence the increase in the use of digital services among different age groups?

The research was conducted through a questionnaire over a period of one month, in March 2024. The survey questionnaire was conducted in an online survey using a Google Forms form and was sent to 130 addresses. The response rate is 68.46%, that is, 89 correctly completed questionnaires were returned. The questions in the questionnaire were of a closed type conceived on the basis of research questions. Respondents also expressed their agreement/disagreement with the statements, where 1 indicated complete disagreement, and 5 indicated complete agreement with the statement. The research was conducted on a random sample in the territory of the Republic of Croatia. The results are presented graphically and tabularly, followed by an interpretation of the results. In the concluding part of the work, the main conclusions of the work in relation to the research questions, limitations of the research as well as further recommendations are presented.

4. ANALYSIS OF RESEARCH CONDUCTED

89 respondents participated in the research, of which 58% were women and 42% were men. 14% of respondents aged 18 to 25 took part, 18% of respondents aged 26 to 33 participated, 17% of respondents aged 34 to 41 participated, 22% of respondents aged 42 to 51 participated, 52 to 61 participated 19% of respondents, 10% of respondents aged 62 and over participated.

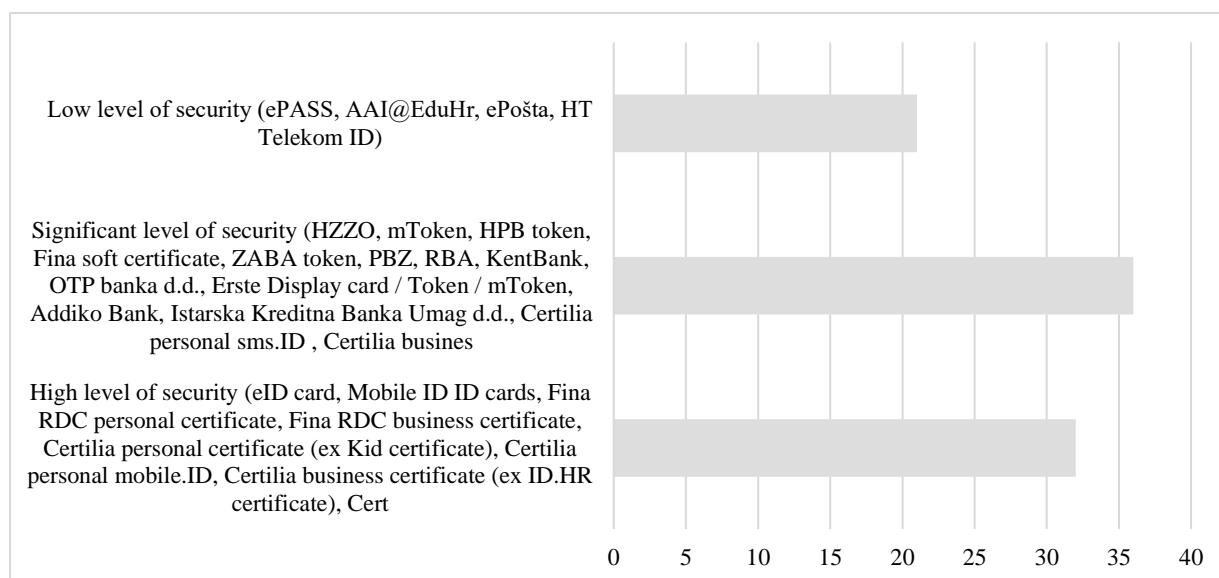
With regard to the level of education, most of the respondents have completed higher vocational education (36%), followed by respondents who obtained the title of master of profession or science, 30% of them, followed by respondents with a secondary vocational education (20%). 10% of respondents have completed a doctorate in science and 3% of respondents have completed elementary school. According to the structure of employment, 57% of the respondents are employed, 21% are unemployed, 13% are retired, while 8% of the respondents indicated other. According to the monthly income of the most respondents, i.e. 34% of them, earn a monthly income from 1.101,00 to 1.400,00 euros, followed by respondents with incomes from 1.401,00 to 1.700,00 euros, 24% of them, then 20% of respondents with incomes from 801,00 to 1.100,00 euros. 10% of respondents have incomes below 800,00 euros, and 12% of respondents earn incomes above 1.700,00 euros.

Sociodemographic characteristics	Frequency (N)	Percentage (%)
Sex		
male	37	42
female	52	58
Age		
18 – 25	12	14
26 – 33	16	18
34 – 41	15	17
42 – 51	20	22
52 – 61	17	19
62 and more	9	10
Education		
elementary school	3	3
high school	27	20
higher vocational education	32	36
master's degree	18	30
doctor of science	9	10
Working status		
employed	51	57
unemployed	19	21
pensioner	12	13
the rest	7	8
Monthly income		
up to EUR 800.00	9	10
from 801 to 1100.00	18	20
1,101.00 to 1,400.00	30	34
1,401.00 to 1,700.00	21	24
1,700 and more euros	11	12

*Table 1: Profile of respondents
 (Source: Author's research)*

After the demographic questions that characterize the sample, questions related to the e-citizen system followed. The first question related to the frequency of system use. 13% of respondents use the system every day, 9% of respondents several times a week, 12% of respondents once a week, 15% of respondents several times a month. 20% of respondents use the system once a month, and 30% of respondents use the system and system services only sometimes. Credentials of high, significant and low security levels are used to access the system.

Respondents mostly use significant security credentials, 40% of them, high security credentials are used by 36% of respondents, and low security credentials are used by 24% of respondents. Based on the answers given, it is evident that only 36% of citizens can use all the services of the system because they access credentials of a high level of security. In further activities, citizens should be made aware to use credentials of a high level of security, because the value and usefulness of the system for users is to the extent that they use the system itself and all the possibilities it offers. The structure of the answers is shown in Figure 1.



*Figure 1: Credentials used to access the e-citizen system
 (Source: author's research)*

In order to access certain services, i.e. those with a high level of security, it is necessary to activate an electronic identity card, so the next question related to the activation itself. Of the total number of respondents, 66% of respondents activated their electronic identity card, 18% of respondents are in the activation process either independently or by going to places where they can do it, while 16% of respondents do not and do not intend to because they use other forms of credentials to access services that require a high level security. Of the total number of activated electronic identity cards, 24% of respondents did so independently, 46% of respondents in police stations, and 30% of respondents in other locations where it was possible to do so. From these results, it is evident that enabling activation with help, or customer support, means a lot to users, because most of them did it in places that enable it. In the next survey question, respondents answered which services from a particular area they use the most, with the possibility of multiple answers. The most represented services are in the areas of family and life, health and education. These are, for example, e-Registry services, e-Services of the Ministry of Interior, e-Tax, e-Diary for parents, Health Portal, services from pension insurance and others. The respondents' answers are shown in Figure 2.

Figure following on the next page

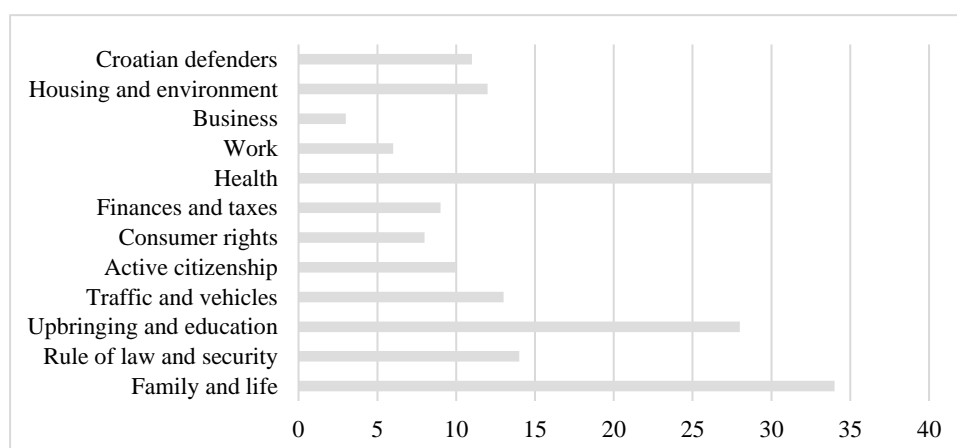


Figure 2: Services that respondents use the most through the e-citizens system
 (Source: author's research)

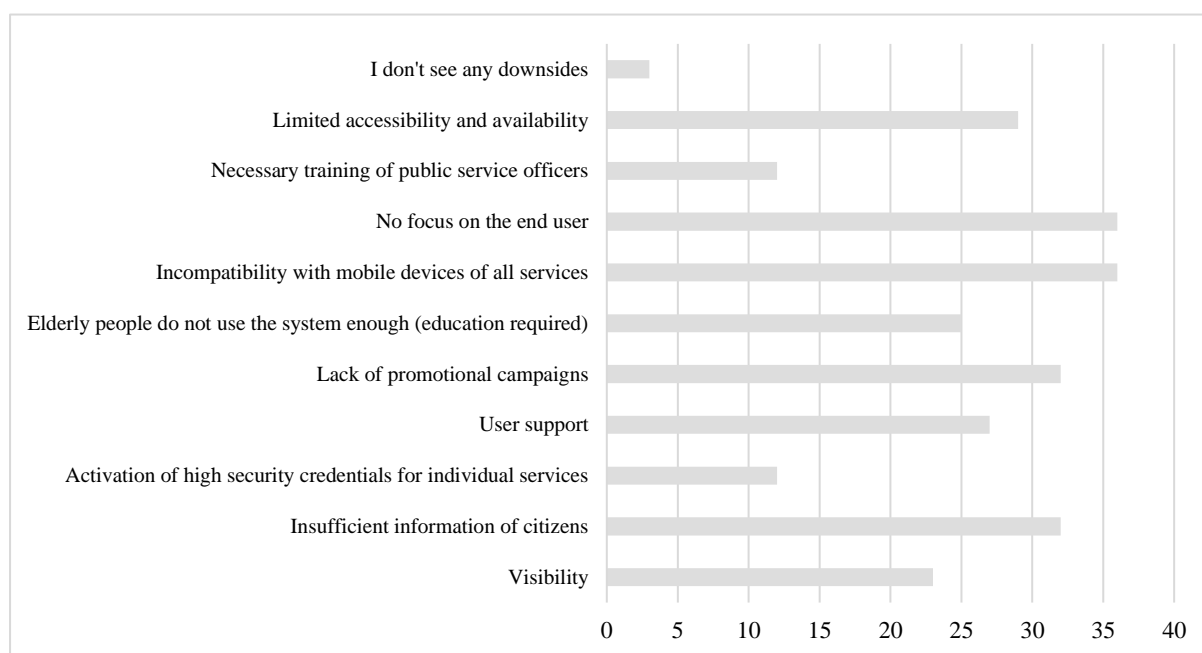
Furthermore, the respondents rated individual listed elements with grades from 1 to 5, with which they express their satisfaction or dissatisfaction in terms of the functionality and quality of the system and information. Grade 1 - indicates complete dissatisfaction, and grade 5 - complete satisfaction. Table 1. shows the structure of respondents' answers expressed in percentages. The majority of respondents rated the availability of services (61%), trust (56%), security (54%), ease of use of the system, i.e. design and user experience (52%), and that the system meets all the respondents' needs for e- services (52%). To a slightly lesser extent, they are satisfied with the response to inquiries (47%), customer support (40%), innovations, speed and efficiency (37%). Being informed about how to use it is the element with which respondents are least satisfied. As part of the respondents are of an older age, this answer is not surprising considering that they are used to using these services in a traditional way (at the administration counters) and they need additional education, information and customer support in order to dare to use these services in digital form.

Assessment element	1	2	3	4	5	In total (4 and 5 in %)
Confidence	6	11	27	24	33	56
Security	7	19	20	25	29	54
Ease of use (design and user experience)	10	13	25	27	25	52
Information about the method of use	35	25	18	10	12	22
User support	17	25	18	21	19	40
Availability of services	9	13	18	25	36	61
Response to inquiries	17	16	20	25	22	47
Innovativeness (new and useful features in the work)	21	25	17	16	21	37
Efficiency and speed	17	15	31	18	19	37
It meets all my needs	8	18	22	25	27	52

Table 2: Satisfaction/dissatisfaction with the elements of using the system
 (Source: author's research)

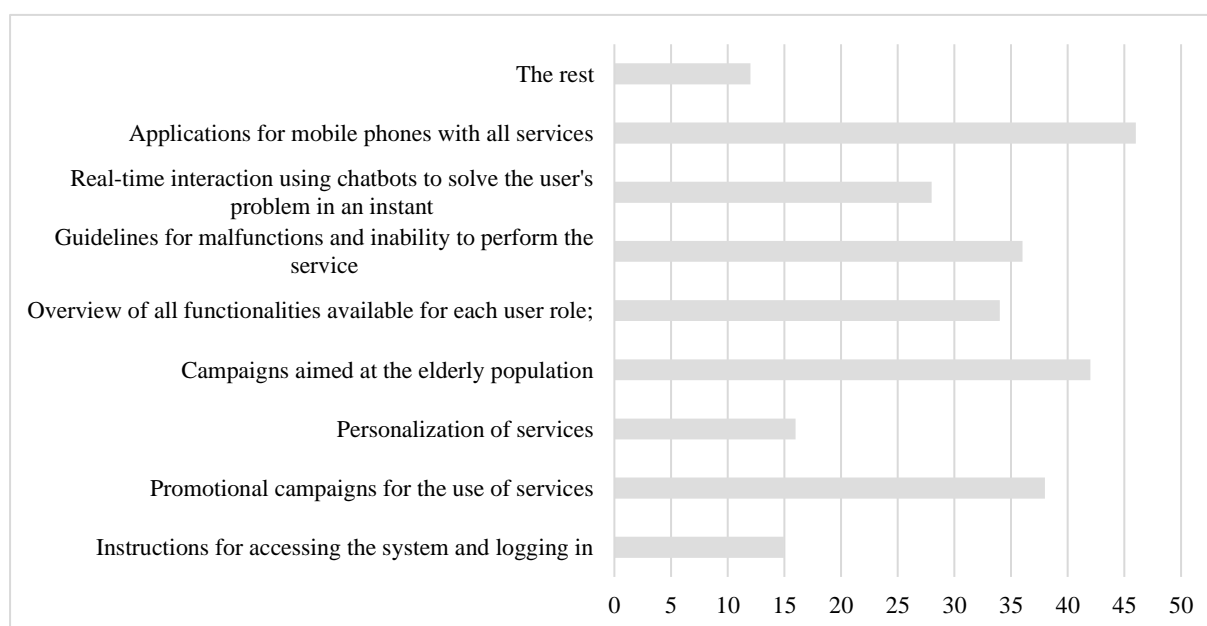
Respondents pointed out the speed of obtaining documents, saving time, better information, networking of institutions, as well as ease of service delivery and process automation as the biggest advantages. Respondents were able to answer multiple questions about the shortcomings of the system (3 predominant answers), where they pointed out as the leading ones: lack of adaptation to mobile devices of all services, focus on the end user, lack of

promotional campaigns, insufficient information of citizens, elderly people do not use the system enough (necessary education) and transparency. The structure of the responses is shown in Figure 3.



*Figure 3: Disadvantages of the e-citizen system according to respondents
 (Source: author's research)*

Furthermore, the respondents gave an answer to the question of what, in their opinion, would encourage greater use of the system. One of the activities that most respondents agree with is an application for mobile devices with all system services, campaigns aimed at the elderly population as well as campaigns that educate how to use the system, real-time interaction as well as guidelines for work errors and their elimination. The structure of the responses is shown in Figure 4.



*Figure 4: Respondents' opinions on activities to encourage greater use of the system
 (Source: author's research)*

The opinions of respondents with comments and suggestions are very important for the improvement of services and improvements in work. There is a form on the portal for submitting user comments and suggestions, with which 55% of respondents who use the system submitted their comments or suggestions for improving the site. After conducting research on the attitudes and perceptions of citizens related to the value and usefulness of public services and the e-citizen system, it is evident that the majority of respondents use the e-citizen system due to time savings, availability of services, speed of obtaining documents, information through consolidated data and other things makes the circumstances easier for them in their everyday life. The majority of respondents pointed out that they are satisfied with the availability of services, have confidence and security in the system, and that the system meets all their needs in terms of the services they need. As elements that should be improved in terms of raising the quality to a higher level, there are responses to inquiries, customer support, speed and efficiency, adaptability of the mobile application for all services, focus on the end user, promotional campaigns, information and education activities for senior citizens, how would use the system more. The results of the research, that is, the attitudes and opinions of the respondents about the system, highlighted the advantages and disadvantages of the system, which correspond to the activities that will be continuously worked on in the coming period. The Digital Croatia Strategy until 2032 defines activities and guidelines that should eliminate these perceived shortcomings and thus improve the value and usefulness of the system for users. The activities relate to: conducting marketing activities to increase the number of users, informing about available services through the system, upgrading the system using new technologies, constant work on the user experience due to ease of use, education and information for elderly citizens, motivating citizens to activate their electronic identity card, a centralized system of customer support with the application of innovative technologies.

5. CONCLUSION

Digitization of public administration services has been carried out for a decade. There is a continuous increase in the number of users due to the advantages that the system offers to users. Also, continuous work is being done to improve the functionality of the system and the user experience, as well as the number of services. In 2021, the redesign of the system related to the functionality of single sign-in and check-out, accessibility, retrieving data via personal identification number, parents' access to services for children increased the number of system users who can realize more than 100 different services through the system. The strategy of digital Croatia until 2032 defined activities and guidelines that should eliminate the perceived shortcomings, and at the beginning of 2024, a tender was launched for a mobile version of m-citizens in order to make services even more accessible and users access them more. After the conducted research, the main conclusions were formed based on the research questions:

- Intensify promotional campaigns about system capabilities and services that can be realized
- Inform, educate and provide customer support for the elderly population about the system and services
- Continue to work on the activation of electronic identity cards
- Make citizens aware of using high security credentials
- Consider user comments and suggestions for improvements in work and ease of service delivery
- Work intensively on the m-Citizens mobile application to make services more accessible
- Provide real-time customer support
- Inform and educate the younger population about the services and use of the system and its advantages
- Continuously monitor and invest in accessibility, availability, user experience and functionality of the system.

The aforementioned activities would increase the number of users, but also the number of services that users would use because they are educated and informed, and the value and usefulness of the system is precisely how much users use it. When interpreting the research, the limitations of the conducted research should be taken into account. Descriptive statistics were used in the paper, and the research was conducted on a random sample of 89 respondents who voluntarily filled out the questionnaire. An additional limitation is that the research was conducted once. In order for the research to be representative, it needs to be conducted in more and longer time series so that certain changes can be correlated and further examined. Trends in the movement of the analyzed variables could also be determined. Future research could include the activities that will be worked on in the coming period and their impact on the increase of system users, the use of services, the satisfaction of respondents and their assessment of the value and usefulness of the implemented activities and improvements in the system.

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MARKETING STRATEGY IN TOURISM PRESENTED ON THE CROATIAN HOTEL INDUSTRY MODEL

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ABSTRACT

The main topic of this paper is the marketing strategy of the Croatian hotel industry, a key segment of the country's tourism sector. Due to the dynamic and competitive market, hotels are faced with the challenge of effectively differentiating themselves from the competition and adjusting to guests' requirements. The study's primary objective is to examine the various marketing instruments and strategies Croatian hotels use to enhance their brand's visibility and attract prospective customers. The paper aims to identify the most important marketing tools, investigate the effects of digital media, analyse the relationship between successful business operations and high-quality communication, and develop best practices for hotels for improved marketing interaction with clients in today's market. According to the research findings, occupancy and visitor satisfaction typically scored well despite differences in capacity management results. According to correlation analysis, capacity occupancy and customer satisfaction strongly correlate to mobile marketing and search engine optimisation.

Keywords: Hotel Industry, Marketing, Republic of Croatia, Tourism

1. INTRODUCTION

Marketing communications are essential for obtaining a competitive edge in the fast-paced tourist sector, along with drawing in, and keeping target audiences. As a global sector, tourism requires a well-thought-out marketing plan to communicate with prospective clients effectively. Marketing communications is a dynamic and intricate business component that draws in clients, increases brand recognition, and forges enduring relationships with them (Kotler, 2001). Planning and implementing marketing strategies effectively requires understanding market communication's features in the context of tourism. According to Križman Pavlović and Živolić (2008), the application of generic marketing postulates to the specific circumstances in which relationships are formed between the participants in the tourist market is how the idea of market communication in tourism is thus interpreted. According to Previšić and Ozretić Došen (2007), marketing communication and tourism are two interrelated fields that are crucial in attracting tourists, fostering pleasant experiences, and raising awareness of the location. According to Previšić and Ozretić Došen (2007), tourism marketing communication encompasses a broad range of methods and approaches employed by tourist destinations, hotels, and other tourism enterprises to inform, attract, and sustain communication with the target audience. Based on terminology perspective, marketing can be viewed as a distinct industry since it changes to meet the demands of different markets and customises its approach for each. While marketing communication in the tourism industry does not differ from the classical marketing, traditional marketing theories and techniques are applied to the specific market's conditions, (Kotler et al.,

2010). To be more precise, one of the essential elements of market communication in the tourism industry is their distinctiveness. Tourism marketing materials must consider that tourism is frequently viewed as an experience (Todorova, 2015). For this reason, tourism-related marketing communications frequently emphasise travel's sentimental and immersive elements. Narratives, images, and videos frequently arouse feelings and establish the ideal impression of a place or hotel (Todorova, 2015). The target group is frequently clearly identified in marketing communications related to tourism. Different destinations draw different kinds of travellers and fulfil distinct functions. As a result, it's critical to modify marketing messaging to suit the target group's needs, interests, and preferences (Kotler et al., 2010). Consequently, this customisation strategy enables travel destinations to produce more appealing and pertinent advertising campaigns (Kotler et al., 2010). Establishing objectives and figuring out how to achieve them is the aim of all industries. Market communication in the tourism industry aims to offer goods or services that entirely fulfil visitors' desires and requirements (Kotler et al., 2010). Since one company cannot meet all the requirements and wishes of travellers with its current offerings, tourism providers frequently collaborate to meet the demands and wishes of travellers better. Such partnerships include car rental agencies and hotels working with airlines to provide loyalty programmes that let travellers accrue points to their advantage. Creating packages that link car rental firms, cruise lines, airlines, hotel chains, railway companies, and many other businesses involved in the tourism industry is an example of collaboration in the tourism industry (Hsu and Gartner, 2012). This paper contributes significant insights regarding marketing communication in the Republic of Croatia's hotel tourism industry. This paper thoroughly reviews various marketing techniques pertinent to the hotel sector by analysing the primary marketing tools and strategies Croatian hotels utilise to advertise their services and attract new clients. By understanding social media and digital media's role in hotel marketing communications, hotel businesses may enhance their online visibility and attract more tech-savvy guests by developing a better online presence. Additionally, this article emphasises the significance of investing in high-quality marketing strategies by analysing the effect of marketing communications quality on many aspects of hotel operations, such as reservations, occupancy, and client satisfaction. The article offers relevant guidelines and recommendations that restaurants can use to enhance marketing communications and strengthen their competitive edge in the market by identifying the most efficient communication ways and channels.

2. THE IMPORTANCE OF MARKETING FOR HOTEL AND TOURISM INDUSTRY

The goal of marketing initiatives in the tourism sector, particularly in the hotel and catering sectors, is to meet consumer demands pertaining to hotel products (Hsu and Gartner, 2012). Hotel marketing requires a thorough understanding of the demands and preferences of potential tourists in the tourism market (Kotler et al., 2010). Based on this study, marketing must ensure that a hotel product design satisfies the tourists' demands. Furthermore, according to Kotler et al. (2010), marketing communications seek to sell the hotel product and provide it to the travel market at affordable prices. To achieve efficient advertising and promotional communications, hotels must innovate their products or services, follow market trends, and modify their positioning strategy and tactics as required (Berc Radišić, 2004). Within the framework of this paper, it is imperative to point out the significance of viewing marketing through the lens of the business concept. Specifically, a company's business policy relies on a particular way of thinking and doing. To be more precise, it is a specific approach to the design, working on and carrying out business plans. In this sense, marketing is the achievement of the long-term success of an organisation and its goals, resulting in a coordinated focus of all staff members on creating a satisfied end customer (Križman Pavlović, 2008). Understanding the overlap between the concepts of tourism products, tourism services, and tourism offers is crucial, especially considering the importance of marketing in the travel industry.

The expression "tourism product," which refers to a service defined by specific and descriptive attributes, is more appropriate in this case (Hsu and Gartner, 2012). Tourism product is a complex product comprising several goods and services. It is characterised by a mismatch between the point of purchase and the point of consumption, so it is non-transferable and intangible. In addition, it cannot be saved, and its essential elements are availability, attractiveness, capacity, price and image, i.e. the public perception of the product (Kušen, 2002). Every sector also aims to establish objectives and choose the methods by which they will be met. Tourism marketing emphasises positioning products that fully satisfy the needs and wants of travellers rather than simply making a profit (Hsu and Gartner, 2012). In this sense, the same authors note that the goals of tourism marketing must be clearly defined to be helpful to companies, which requires hierarchical organisation, quantitative definition, definition of realistic goals and their coherence. A vital aspect of communication between the hotel as a provider and the hotel guest as the end client is the promotion of tourism and hospitality. Nowadays, selling a hotel product on the market is almost impossible without prior advertising. The main goal of hospitality advertising is to create a positive image and perception of the product offered and persuade customers to try it out and consume it (Cox and Koelzer, 2005). Thus, advertising plays a crucial role in attracting tourist demand in the tourism sector, where supply is often stagnant and inconsistent (Cox and Koelzer, 2005). Divergent views exist regarding the function of advertising in general and the hotel product in particular. These viewpoints can be divided into two main groups: negativist and positivist (Kotler et al., 2010). The negativist approach downplays the importance of advertising and claims that it can create a distorted image of a product. However, this view is considered unrealistic as clients would quickly notice any misrepresentation of the hotel in advertising. Therefore, advertising must be objective, and the hotel can promote its product through its staff's expertise and by providing high-quality service (Kotler et al., 2010). The positivist views on advertising dominate the modern hotel industry. The task of hotel advertising is to establish communication with potential customers, introduce the hotel product to the market, inform customers about the amenities and persuade potential customers of the advantages of their product over their competitors' products (Hsu and Gartner, 2012). Moreover, hotel marketing is a crucial component of the hotel company's success. By selecting the right marketing strategy, hotels can attract potential guests and build a recognisable brand, strengthen customer loyalty, and increase their market share. Key tourism-related industries include hospitality and catering, thus emphasising the necessity of applying marketing theory to tourism and travel-related businesses. Tourism has a strong market orientation; thus, continuously identifying and monitoring customer demands and integrating them with specific services becomes crucial. (Cizmar and Wever, 2000). Despite drawing from the marketing of tangible commodities, hotel marketing must be tailored to the unique requirements of the hospitality industry (Cerović, 2003). Since hotel companies provide various services, their mutual comparison can be challenging, and the lack of an objective way to measure quality highlights the importance of the correct pricing as a quality assessment factor (Cerović, 2003). Considering the services are intangible, institutional presentation is the primary goal of advertising, with a particular focus on the user experience and delivery of services (Pelsmacker et al., 2018). As already mentioned, the function of marketing is to provide ideas and mobilise the entire organisation to transform those ideas into a product and sell it. Consequently, marketing is far too important to be treated as a standalone function (Pelsmacker et al., 2018). This includes the company in general, seen from the customer's perspective, i.e. through the "prism" of the end result (Pelsmacker et al., 2018). Company research, competition policy, advertising, services, business propaganda policy and planning, sales promotion, pricing policy, long-term investment planning, overall financing, and the creation and execution of the overall marketing plan are all examples of marketing activities.

From the above, it can be inferred that a hotel's marketing department has a significant role in business operations, affecting every other department's operations (Gursoy, 2018). With the help of hotel marketing, hoteliers can better serve their guests, stay competitive, boost sales, and increase profits. The rising market demand from domestic and foreign tourists makes it harder for hotel employees in charge of marketing to carry out their responsibilities efficiently. The objectives of hotel marketing are studying the possibilities and conditions for identifying current and future services, entering sales contracts, and selecting services expected to be sold in the emerging tourist markets (Babić-Hodović, 2010). Hotel marketing includes collecting market data, analysing it, and presenting it to the public to boost revenue and attract potential customers or service recipients. Hotel marketing forms of communication consist of numerous strategies and channels the hotel uses to interact with the intended audience to advertise its services, attract guests, and cultivate a favourable reputation (Coban, 2012). The previously mentioned forms are examined below, focusing on modern ones like digital advertising, which is essential to hotel advertising (Coban, 2012; Grgona and Supić, 2007).

Table 1 below lists different sales promotion strategies in the context of hotel companies.

Table 1: Different Strategies for Increasing Sales in the Context of Hotel Companies

SALES PROMOTION STRATEGY	EXAMPLE OF IMPLEMENTATION IN A HOTEL
Samples	Launch of a special package with free samples of cosmetic products.
Coupons	Loyalty program with personalised digital coupons for discounts on future stays.
Cashback	A cashback program for participating guests, giving them a percentage of their expenses back.
Packages at a better price	Introducing the "Saving Package" that combines accommodation, meals and wellness treatments at a more affordable price.
Gifts or premiums	Free exclusive gifts, such as a set of toiletries for guests who book an extended stay.
Promotion at the point of purchase	Placement of information panels and promotional materials at key locations within the hotel.
Competitions and games	Organisation of a competition among guests for the best photo or review with attractive prizes.

Source: Authors' analysis based on various sources

With various advertising tactics, hotels aim to draw in new business, retain hold of their current clientele, and boost their overall revenue. Samples, coupons, cashbacks, value packages, gifts or perks, sales promotions, competitions, and games are among the main theoretical elements of hotel sales promotion (Morrison, 2010). Samples are small quantities of additional products or services provided to clients in the hospitality sector to entice them to try and ultimately purchase. Customers can take advantage of additional discounts or benefits when they use vouchers, mainly if they are a part of a loyalty programme. According to Kotler and Kotler (2013), *cashback* is an advertising strategy that offers clients a percentage of their purchase price or credit towards future bookings as a reward for their business. Ištvančić et al. (2017) state that technological advancement has become a significant factor in many sectors, such as catering, with the rise of the telecommunications industry, the development of IT skills, the development of the Internet, and sophisticated software to support the provision of services. This brings us to discuss digital media or digital marketing to promote the hotel's offer. According to the Internet age's hypothesis, the success of future companies will depend on their customers' knowledge; in other words, they will have to inform clients about their goods and services and provide them in a profitable marketplace (Ištvančić et al., 2017).

The Internet greatly impacted the hotel supply chain by making it easier to communicate with suppliers. However, its most significant influence was seen in sales and how hotels interact with their customers (Morrison, 2010). Seasonality and impermanence are factors that define the hotel industry the most. Thus, to sell rooms to potential guests, hotels often rely on intermediaries like travel agencies and tour operators (Morrison, 2010). This number is rising due to the growing number of families using the Internet, their ability to buy or gather information, and the emergence of online booking platforms and go-betweens. This increase is not surprising given that online intermediaries provide customers more choice, convenience, transparency, price comparison, and simplicity of use and access than traditional intermediaries (Leite and Azevedo, 2017). Hotels rely on various online leads, direct bookings and sales representative expertise (Kumar and Syed, 2021). Furthermore, the emergence of digital technologies has profoundly impacted customers and their behaviour, needs, and expectations. The customer changed from being passive to being a lot more self-reliant, competent, assertive, and mobile than ever before. According to some authors (Labanauskaitė et al., 2020; Mahmutović, 2021), the modern marketplace has evolved into an arena where customers actively participate in dialogue with businesses. In the hotel industry, the shift from passive to active customers required the development of interactive hotel websites, travel-related social media platforms such as Tripadvisor and Holidaycheck, and social networks such as Facebook and Twitter. Value for money is becoming increasingly important due to a rise in reviews and ratings, as more travellers base their reservation selections on the reviews they read before their trip. However, this asks for a greater focus of hotels on providing high-quality services and effective communication (Mahmutović, 2021). Hotels should use effective reputation management techniques, take guest feedback seriously and take appropriate measures to avoid possible negative impacts. Despite the advantages that hotels can have from e-commerce, there are severe obstacles to their further development due to the inability to develop an appropriate strategy and acquire appropriate strategic skills (Mahmutović, 2021). According to the author cited above, businesses must adapt their strategies to survive and thrive in the 21st century's conditions, marked by rapid change and an unpredictable global environment, a trend towards virtual organisations among businesses, the quick development of new technologies, and shifting customer preferences. Search engine marketing, or SEM, is the process of promoting websites using optimisation and advertising techniques to make them more visible in search results (Krajnović et al., 2019). Creating sponsored adverts, or paid search results, for today's top search engines, like Google, Bing, Yahoo, and many more, is known as search engine marketing. Displays and banners that follow people based on their surfing history and listen to what they say are additional examples of this digital technology. This digital marketing strategy is simultaneously engaged each time a user searches for a specific term and sees advertising tailored to that term (De Palsmacker et al., 2018). As a result, this type of marketing can be used for pay-per-click advertising and search engine optimisation (SEO). These are the primary strategies businesses employ to boost traffic to their official website (De Palsmacker et al., 2018). Search engines have grown in importance as a source of information for Internet users looking to learn more about tourism and hospitality products and services. Search engines enable travellers to access billions of websites covering online tourist content (Krajnović et al., 2019). In response to user queries, search engines generate a web URL, a brief description, similar sites, and a cache. They then show the documents sorted, having retrieved relevant documents from search indexes the indexer had built. Additionally, sponsored advertisements may appear next to search-specific adverts (Krajnović et al., 2019). Prospective tourists and travellers typically utilise brief terms when looking for possible vacations—a search engine may include up to four keywords (De Palsmacker et al., 2018). Furthermore, most visitors don't ignore the results shown on a separate page. Despite millions of possible web pages being located, the user is presented with a comparatively small number of results.

According to De Palsmacker et al. (2018), hotel businesses must have their website positioned on search engine results' first or second page. SEM, a crucial technique for raising website visibility, falls into two groups: Paid search and SEO (Search Engine Optimisation). The process of modifying website components to improve search engine visibility is known as SEO. Ensuring a website is visible to search engines and boosting the probability that a search engine will find it are the two main objectives of SEO. Various search types, including image, location, and video searches, can be considered by SEO (Strauss et al., 2012). A hotel's online visibility can be enhanced by its location, messaging, and content, which can be used to drive search engine traffic to its website (Strauss et al., 2012). According to Khmiadashvili (2019), hotel SEO frequently results in the same amount of reservations as expensive billboards, television advertising, printed advertisements, or positioning in phone books or newspapers. All organisations and companies' websites undergo SEO optimisation to attain the greatest potential positioning in search engines. The process follows the same steps. Internet users, or future visitors, do, however, search for and provide tourism services within the broader context of the location, in contrast to other categories. Therefore, a new methodological approach should be used to build the search engine strategy for websites related to accommodation and travel. A deep understanding of the travel and hospitality sectors and in-depth target research, target keyword analysis, and customised search behaviour are all necessary for a successful targeted search strategy.

3. EMPIRICAL RESEARCH OF THE CROATIAN HOTEL INDUSTRY'S MARKETING COMMUNICATION

The research explores the various marketing techniques and technologies Croatian hotels use to attract more customers and raise awareness of their goods and services. Furthermore, the research examined the impact of social media and digital media on hotel marketing communications and evaluated how the quality of marketing communications affects the hotel's entire operations. This resulted in creating appropriate guidelines and suggestions for enhancing the hotel's marketing communications while respecting the company's goals and the contemporary market's demands.

3.1. Research Methodology

An online poll was used for an empirical study to gather primary data. The study was carried out through a Google form that the article's author made available to staff members, particularly hotel managers, through e-mail. The form was then disseminated by the "snowball" method to respondents in 150 small, medium, and large Croatian hotels that fell into the 3*, 4*, and 5* categories. Thus, 150 hotel managers and employees participated in the study, which had as its goal learning about the essential elements of marketing communication in the Republic of Croatian hotel industry, such as what types of media outlets they employ and how they ultimately impact various aspects of their operations. The study was conducted between September 16, 2023, and October 26, 2023. The objective of the survey questionnaire was to gather information on respondents' agreement or disagreement with various assertions pertaining to capacity occupancy or the satisfaction of visitors. However, the purpose of expressing the degree of measure (frequency) was to determine how much they use specific marketing communication forms. The questionnaire was divided into three sections: the first focused on the hotel's "demographic" information; the second covered business-related topics, including capacity and visitor satisfaction; and the third dealt with marketing communication channels. The respondents' report on the degree of the two sub-dimensions, "digital marketing forms" and "traditional marketing forms," was inferred from marketing communication. After meeting the target of 150 valid (89.29%) completed surveys out of 168 total participants, the data were evaluated.

As a result, a thorough investigation was conducted to ascertain the variations in marketing communication styles across hotels belonging to different categories and evaluate the influence of marketing communication styles on various facets of business performance.

3.2. Research Results

Data processing was done using statistical software named SPSS. Analyses employ multiple comparisons, significance testing, and descriptive statistics to find statistically significant differences. Following data analysis, conclusions were reached by interpreting the findings. Owing to the work's narrow focus, only the most important findings—detailed below—are showcased.

Table 2: Descriptive Data Regarding the Hotels Involved in The Research

The Hotel's Dimensions					
		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Small (up to 50 rooms)	31	20.7	20.7	20.7
	Medium (51-150 rooms)	67	44.7	44.7	65.3
	Large (more than 150 rooms)	52	34.7	34.7	100.0
	Total	150	100.0	100.0	
Number of Stars					
		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	3*	32	21.3	21.3	21.3
	4*	110	73.3	73.3	94.7
	5*	8	5.3	5.3	100.0
	Total	150	100.0	100.0	
Marketing Implementation					
		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	A separate division	144	96.0	96.0	96.0
	Outsourcing	6	4.0	4.0	100.0
	Total	150	100.0	100.0	

Source: Authors' analysis based on survey responses that were completed and processed through the SPSS programme

The range has been divided into three groups based on hotel size. Specifically, 31 small hotels (with up to 50 rooms) accounted for 20.7% of the sample as a whole. Of them, 67 were medium-sized hotels (51–150 rooms), accounting for the greatest proportion of 44.7%. Of the overall sample in the study, 52 big hotels (with a total of over 150 rooms) accounted for 34.7%. Another factor that sheds light on a spectrum of hotel quality according to the standards is the number of stars. Thirty-two hotels, or 21.3% of the total number of hotels, are 3-star hotels; 110 hotels, or 73.3%, are 4-star hotels. Only eight hotels, or 5.3%, have five stars. Lastly, of the 144 hotels, 96% of them have a dedicated marketing department; only 4% of hotels, or 6 of them, outsource the implementation of their marketing activities. The variables' descriptive data are shown in Table 3 below.

Table following on the next page

Table 1: Variables Used in The Research

Capacity Occupancy (PK)	
PK1	The hotel typically maintains a high level of room occupancy all year long.
PK2	Adding additional services (such as a restaurant or spa) helps raise hotel occupancy.
PK3	Seasonal promotions contribute to a more even occupancy of capacities.
PK4	The hotel successfully manages the available capacity during special events or holidays.
PK5	Existing hotel capacity management systems contribute to the optimisation of occupancy.
PK6	Various themed offers and hotel packages often attract guests, contributing to high occupancy during different periods.
PK7	The hotel successfully cooperates with local partners to attract additional demand and maintain occupancy.
PK8	Additional facilities such as conference halls or event spaces increase hotel occupancy during business events.
Guests Satisfaction (ZG)	
ZG1	Guests regularly give positive feedback about the quality of the hotel's service.
ZG2	Guests find the hotel staff friendly and feel taken care of.
ZG3	The hotel rooms meet guests' expectations in terms of comfort and cleanliness.
ZG4	Additional services (e.g., transportation and excursions) contribute to guest satisfaction.
ZG5	Quick and efficient handling of guest complaints further improves satisfaction.
ZG6	The guests are satisfied with the quality and cleanliness of the hotel accommodation units.
ZG7	Guests regularly highlight the quality of the hotel's gastronomic offer as a positive part of their stay.
ZG8	The hotel provides a personalised experience to guests, which further contributes to their satisfaction.
Digital Marketing Forms (DO)	
DO1	Marketing on internet search engines (search engine marketing)
DO2	Social network marketing
DO3	Content marketing
DO4	E-mail marketing
DO5	Mobile Marketing
DO6	Digital Display Marketing (used to advertise through digital channels, including websites, mobile apps, videos, and more)
DO7	Remarketing (used to target users who have already visited the website or interacted with the hotel)
DO8	Affiliate Marketing
DO9	Website Analysis (monitoring and measurement of various parameters on the website to determine the effectiveness of marketing campaigns, increase conversion and improve user experience)
DO10	Database Marketing
DO11	Influencer Marketing
Forms of Traditional Marketing (TO)	
TO1	Television and Radio Advertising
TO2	Printed Advertising Materials (magazines, flyers, posters...)
TO3	Trade Fairs
TO4	Personal Selling
TO5	Sales Promotion (sweepstakes, coupons...)

Source: Authors' interpretation based on survey responses

Consequently, the descriptive results for the capacity occupancy segment are displayed in Table 4. Respondents indicated how much they agreed with the statements regarding capacity occupancy on a Likert scale ranging from 1 (not at all) to 5 (to a great extent). The occupancy of the hotel's capacity was rated with an average of 3.4458, a minimum of 2.63, and a maximum of 4.88, based on the research carried out. According to the above, the capacities are only partially occupied. It is evident from analysing different strategies that hotels succeed to varying degrees in different aspects of capacity management. For instance, hotels with an average rating of 3.6067 generally have high room occupancy.

Similarly, with an average rating of 3.6533, additional services lead to higher occupancy. Furthermore, the average scores of 3.5067 and 3.5133, along with the significant standard deviations (0.99493 and 1.06018), indicate greater variability in attaining success when collaborating with local partners and providing additional amenities like conference halls. With scores between 3.3000 and 3.3333 of moderate variability, strategies including seasonal promotions, managing capacity during special events or holidays, and utilising current capacity management methods demonstrate moderate performance.

Table 4: Descriptive Findings Regarding the Usage of Digital Marketing Communication Channels

	N	Minimum	Maximum	I mean	Std. Deviation
Digital forms	150	1.82	4.27	2.7782	,43189
SEM	150	1.00	5.00	2, 1867	1.05160
Social Network Marketing	150	3.00	5.00	4.0067	,83140
Content Marketing	150	1.00	4.00	1.9933	,83140
E-Mail Marketing	150	2.00	5.00	3.6733	,99324
Mobile Marketing	150	1.00	4.00	1.5667	,68949
Digital Display Marketing	150	1.00	5.00	2.9733	1.40921
Remarketing	150	1.00	4.00	2.5600	1.14973
Affiliate Marketing	150	1.00	4.00	2.5467	1.07807
SEO	150	1.00	5.00	2.6000	1.14106
Database Marketing	150	1.00	5.00	2.3733	1.15012
Influencer Marketing	150	3.00	5.00	4.0800	,61872

Source: Authors' analysis based on survey responses that were completed and processed through the SPSS programme

The study's findings on digital marketing communication are presented, providing insight into participants' opinions on various marketing channels. The range of scores for the general usage of digital forms is 1.82 to 4.27, with an average score of 2.7782. With a standard deviation of 0.43189, which is relatively low, the scores are consistent, suggesting that participant opinions regarding the use of digital channels are generally uniform. More specifically, the hotels included in the study only have a relatively small presence of digital marketing communication channels. As seen below, some variations are more typical, though. Specifically, examining the individual forms, it can be seen that Search Engine Marketing (SEM) has an average score of 2.1867, with a considerable standard deviation of 1.05160 and a wider range of scores (1.00 to 5.00). This suggests that attitudes towards SEM vary more widely. Conversely, social media marketing initiatives received consistently good ratings, as seen by their mean score of 4.0067 and comparatively low standard deviation of 0.83140. There is an extensive range in the usage and ratings of other digital channels, like SEO, e-mail marketing, and mobile marketing. Influencer marketing, for instance, stands out due to its high average score of 4.0800 and low standard deviation of 0.61872, which point to a high degree of consistency in the channel's perceived effectiveness. With a range of scores from 1.50 to 3.25, the average for the general use of traditional forms is 2.3283. In addition to suggesting that the participants have similar opinions on conventional marketing tactics, the standard deviation of 0.44603 shows a relatively limited variance among the ratings, indicating that they are not globally represented in hotel marketing activities. When examining specific conventional channels, the ratings for radio and TV advertisements ranged from 1.00 to 2.00, with an average of 1.1133.

A low standard deviation of 0.31806 indicates a very low score for this advertising method, indicating highly underrepresented usage among hotels. With a more significant standard deviation of 0.78181 and a more comprehensive range of values (1.00 to 3.00), print advertising has an average score of 2.1133. This indicates that opinions about print advertising vary more widely. The average scores for trade fairs and in-person sales are also quite close (1.1133 and 2.0667), suggesting that these three formats are either hardly ever used or poorly represented in the marketing initiatives of the hotels under observation. With an average rating of 4.0200, sales promotion is clearly the most well-regarded conventional marketing channel. Although there is some variation in the evaluations, as indicated by the standard deviation of 0.78978, participants appear to view sales promotion as a very effective and common kind of traditional marketing communication based on the high average rating.

Table 5: Variations in Digital Marketing Communication Methods According to Hotel Category (ANOVA)

		Sum of Squares	df	Mean Square	F	Sig.
SEM	Between Groups	62,707	2	31,354	45,157	,000
	Within Groups	102,066	147	,694		
	Total	164,773	149			
Social Network Marketing	Between Groups	3,571	2	1,785	2,640	,075
	Within Groups	99,423	147	,676		
	Total	102,993	149			
Content Marketing	Between Groups	10,039	2	5,019	7,938	,001
	Within Groups	92,955	147	,632		
	Total	102,993	149			
E-Mail Marketing	Between Groups	48,527	2	24,264	36,223	,000
	Within Groups	98,466	147	,670		
	Total	146,993	149			
Mobile Marketing	Between Groups	32,904	2	16,452	63,761	,000
	Within Groups	37,930	147	,258		
	Total	70,833	149			
Digital Display Marketing	Between Groups	2,539	2	1,269	,636	,531
	Within Groups	293,355	147	1,996		
	Total	295,893	149			
Remarketing	Between Groups	13,819	2	6,909	5,546	,005
	Within Groups	183,141	147	1,246		
	Total	196,960	149			
Affiliate Marketing	Between Groups	3,600	2	1,800	1,560	,214
	Within Groups	169,573	147	1,154		
	Total	173,173	149			
SEO	Between Groups	44,407	2	22,203	21,819	,000
	Within Groups	149,593	147	1,018		
	Total	194,000	149			
Database Marketing	Between Groups	48,275	2	24,138	23,843	,000
	Within Groups	148,818	147	1,012		
	Total	197,093	149			
Influencer Marketing	Between Groups	4,255	2	2,128	5,925	,003
	Within Groups	52,785	147	,359		
	Total	57,040	149			

Source: Authors' analysis based on survey responses that were completed and processed through the SPSS programme

Significant differences were found in the use of digital marketing channels by hotels across several categories, providing a deeper understanding of the hotels' marketing strategies. It is clear that higher category hotels (5 stars) use more sophisticated Search Engine Marketing

(SEM) techniques than do lower category hotels (3 and 4 stars). The statistically significant variations between hotel categories for SEM are confirmed by analysis of variance (ANOVA) (p -value = 0.000), suggesting that particular approaches to applying this marketing strategy may exist. It was shown that there are no statistically significant differences between hotels in different categories regarding social network marketing (p -value = 0.075). These findings imply that all hotels—regardless of category—are similarly active on social media, indicating a domain in which many hotel types employ a comparable strategy. Hotel categories differ significantly from one another when it comes to content marketing (p -value = 0.001), with higher-category hotels typically reporting greater means. This suggests that higher-end hotels frequently use marketing content as a guest attraction tactic. There were statistically significant variations between hotel categories in the realm of e-mail marketing (p -value = 0.000). Higher-category hotels have higher mean values, which suggests that different e-mail marketing techniques are used to connect with prospective customers.

4. CONCLUSION

The research evaluation yielded insights highlighting the significance of effective marketing communications for the hotel sector and the necessity of modifying the strategy in light of emerging trends. According to an analysis of the descriptive findings in the occupancy section, the hotel's occupancy is satisfactory, with an average occupancy of 3.4458. Although the results indicate that various tactics, including extra services, seasonal promotions, collaboration with local partners, and capacity management during special events, can help achieve moderately successful occupancy, hoteliers frequently struggle to maintain balanced occupancy. It is evident from examining the different aspects of capacity management that regional variations exist in hotel performance. The key to hotel total profit is usually high room occupancy, further increased by ancillary services like restaurants and spas. Greater variety in success is seen when working with local partners and offering extra amenities like conference rooms; this suggests that strategies should be modified to account for the unique characteristics of each hotel. With an average user satisfaction score of 3.6117, the results provide an overall positive picture in terms of customer satisfaction. Guests appreciate the excellent service, the staff's friendliness, and the cosy, spotless accommodations. Extra services, prompt complaint handling, and a personalised experience enhance an outstanding customer experience. The fact that evaluations differ slightly, particularly regarding the quality of dining options and extra services, should be noticed. This indicates that hotels still have a long way to go before achieving a consistently high degree of satisfaction. Despite offering valuable insights into the marketing tactics of Croatian hotels, this study contains significant limitations that should be considered when interpreting its results. Firstly, the survey's geographic scope is mainly restricted to hotels along the Croatian coast (76% of the hotels in the sample are coastal), which may impact the results' applicability on the national level. Other continental hotels should, therefore, be included in future studies. Second, the replies rely on the managers' subjective evaluations, which could add inaccuracies or ambiguities to the collected data. Lastly, the duration of the study may have limited the ability to capture long-term trends or seasonal variations. Future studies could expand this time range to span the complete calendar year and potential changes over a more extended period. These time limits should be considered when evaluating the results. Each of these suggestions aims to increase the validity and applicability of research findings to hotel marketing campaigns in the Republic of Croatia.

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THE UNMENTIONABLES OF DEPRIVATION MEASUREMENT: THE CASE OF AFRICA

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ABSTRACT

Inventors of quantitative estimation of national income, which received much attention, attempted to explain that their ultimate and main interest was the wealth of human existence, although what impressed were their indices, rather than their motivations. Yet, such deep and underlying motivation has often been ignored in economic analysis where means of existence are the center and fruit of research. It is, however, important not to confuse the means and ends. Therefore, one should not focus on the intrinsic importance of income, but rather assess it depending on what it builds, particularly lives that are worthy of living. Having a decent income helps to avoid early death. Such an enterprise depends also on other characteristics, namely the organization of society, including public health, medical care, the nature of education and educational system, the scope of social cohesion and harmony, etc. Considering only means of existence or directly observing the type of life people lead constitutes a real difference.¹ These observations and findings reveal a contrast between the approaches based on utility and resources and the approach based on capabilities, of which the initiator is Amartya Sen (Nobel Prize of economics in 1998). The capabilities approach, therefore, attempts to put things right by focusing on the possibility of effective ends concrete freedom of attaining reasoned ends, rather than focusing on means. The present paper falls into two parts. The first part will try to highlight the imperfection of traditional monetary indicators as well as the difficulties to measure the different dimensions of poverty, particularly in emerging countries, such as Morocco. We argue that poverty is not merely an idea of inadequacy of economic means of an individual, but rather a fundamental shortage that deprivation entails_ minimum adequate capability. The second part deals with a reorientation towards capabilities in order to explain the extent to which the latter (the capabilities approach) could serve as a basis for the assessment of the level of deprivation and not that of resources, which focuses on income and wealth. The nature of real existence has always been of interest to social thinkers over the centuries. If the current criteria of economic progress, reflected by a swarm of “turnkey” statistics, focused on growth of inanimate “comfort objects” (such as GNP and GDP at the heart of innumerable economic studies on development), this focus can only be justified, if at all, by the impact of the said objects on human lives that they directly or indirectly affect.. The interest of replacing them by direct indicators of the quality of life, wellness and freedom that human lives enjoy is more and more recognized. Even inventors of quantitative estimation of national income which attracted much attention and adherence tried to make it clear that the ultimate interest was the richness of human existence, although it is their indices, rather than their motivations which had a great impact. William Petty, for example, the pioneer of the measure of national income in 17th Century (He suggested means to assess it so much through the ‘income’ method as through that of expenses, as is said today) formulated his intention as

¹ SUDHIR A. and RAVALLION M (1993), “Human Development in poor countries: On the Role of Private Incomes and Public Services” *Journal of Economic Perspectives*, vol. 7.

follows: to examine whether « the subjects of the kind » lived « in as bad a condition as that of discontented people ». Based on this, he explained the different determinants of people's conditions, including « common safety» and « the particular happiness of every man»². This underlying motivation was often ignored in economic analysis where means of existence were the centre and fruit of research. It is, however, important not to confuse the means and ends. Therefore, one should not focus on the intrinsic importance of income, but rather assess it depending on what it builds, particularly lives that are worthy of living. Having a decent income helps to avoid early death. Such an enterprise depends also on other characteristics, namely the organization of society, including public health, medical care, the nature of education and educational system, the scope of social cohesion and harmony, etc. Considering only means of existence or directly observing the type of life people lead constitutes a real difference. These observations and findings reveal a contrast between the approaches based on utility and resources and the approach based on capabilities, of which the initiator is Amartya Sen (Nobel Prize of economics in 1998). In his work entitled « A New Economic Model», Sen suggests that focus on means of existence should be abandoned in favor of concrete possibilities to live. This also results in a change with regard to means-oriented assessment methods, namely those laying emphasis on what John Rawls refers to as the « primary goods », which are general means, such as income, wealth, powers and prerogatives of functions, social bases for self-respect., etc. The capabilities approach, therefore, attempts to put things right by focusing on the possibility of effective ends and on concrete freedom of attaining reasoned ends, rather than focusing on means. Thus, the present paper is divided into two parts. The first part will try to highlight the imperfection of traditional monetary indicators as well as the difficulties to measure the different dimensions of poverty, particularly in emerging countries, such as Morocco. We argue that poverty is not merely an idea of inadequacy of economic means of an individual, but rather a fundamental shortage that deprivation entails_ minimum adequate capability. The second part deals with a reorientation towards capabilities in order to explain the extent to which the latter (the capabilities approach) could serve as a basis for the assessment of the level of deprivation and not that of resources, which focuses on income and wealth.

Keywords: Africa, Deprivation, Measurement

1. ANTINOMIES OF TRADITIONAL INDICATORS

After World War II, economic growth was the centre in the fight against poverty. In fact, growth was considered as a means to achieve development. Thus, the growth of the GDP per capita became the only measure of poverty. Pigou was the first to rely on income to measure prosperity and welfare. He described economic prosperity as the measurable part of human wellness, the part that can be compared to money standard or benchmark. However, the production and distribution process impacts the income of individuals and households. Income is, then, is also an indicator of economic activity. Income nationwide, GNP, as it was referred to, was transformed into a measure of the activity of the total mass of produced goods and services, weighted by their respective quantities and prices, rather than a measure of individual welfare. GNP per capita is obtained by dividing GNP by the country's number of inhabitants. Consequently, a country's GNP may increase from one year to another, and its GNP per capita may decrease if the population of this country increases more rapidly than its production. For OECD (Organisation for Economic Cooperation and Development) countries, international trade relations are such that it was necessary to replace GNP by GDP, which is the sum of added values created within the borders, whatever the nationality of the people who create them. It is the criteria of residence that is prioritized. It should be noted that GNP or GDP indicate a « production» and not « a living standard ».

²HUL C.H. (1899), *The Economic Writings of Sir William Petty*, Cambridge, Cambridge University Press,

According to certain stakeholders, in order to obtain a country's standard of living depending on its GNP, it is necessary to apply coefficients ranging from minus three to five as per the weight of capital in accumulated in the past, the country's political and economic systems, its geographical and climatic elements, the value of the currency and the weight of the informal sector. In any event, there exists a certain correlation between poverty and low income. Income is the source of purchasing or spending power, access to consumption and saving. In societies where market values are dominant, « *a low income restricts access to the market and can determine a less valorized social status; it is a factor of a more or less marked exclusion* »³. Nevertheless, one cannot put forward that there exists a high causality between a low GNP per capita and poverty. One cannot claim that a person dependent on a low income is automatically considered poor. On the one hand, income is but the monetary element of the allocation of each individual's resources. Various elements can intensify or attenuate the consequences of low income: self-subsistence, reciprocal counter-services, existence of property, constitution of family or extra-family solidarity networks, etc. On the other hand, income is not a necessarily determining component of a poverty condition. From the « *resources* », point of view, income level at a given time has no indication as to prospects of future income, which would undoubtedly be more legitimate. Moreover, as Amartya Sen, in his book « *A New Economic Model* » shows, the same income can have different meanings depending on age, status, aspirations, etc. The calculation of GNP per capita is subject to many statistical difficulties. In his work « *Towards a new measuring system* », elaborated jointly with Sen and Jean Paul Fitoussi, Joseph Stiglitz raises the following question: « *What significance does the calculation of the importance of a physical production flow take on if account is taken of the conditions of its production and distribution between the concerned persons?* »⁴. It is, thus, necessary to underline the problem of distribution of national wealth poses major difficulties. In fact, a growth rate of the GNP per capita can give a flattering image on effective development and ultimately on the poverty combatting strategies. Added to this is the fact that the contradiction between national health and human wellness is very striking. It is apparent in countries where income arising from exports increased significantly due to the rise in oil prices since 2003. For many Arab countries, GNP abruptly increases to levels superior to those of the richest of Western States. However, these same countries sometimes have the poorest communities worldwide. For Joan Robinson, « *Economic growth, when it occurred, rarely solved urgent social problems and, most often, did not cover mass population of emerging countries. By making economic inequalities worse and not solving problems, such as unemployment, malnutrition, diseases and housing deficiency, economic growth always exacerbated social problems and tensions* »⁵. In their work, « *Ruins of development* » Wolfgang Sachs and Gustavo Esteva support the same point of view. According to them, « *Since the rise of proletariat and, later in the welfare state, poverty was interpreted as lack in purchasing power, which should be eliminated by economic growth. Under the banner of combatting poverty, forcible transformation into money economies can be conducted as a moral crusade, which could give way to a so justified appeal to economic expansion* »⁶. Besides inequalities concealed by measuring poverty based on GNP per capita, the latter includes all the goods and services produced and marketed, including harmful and noxious products that pollute the atmosphere and affect health. GNP per capita measures production, but provides little information on populations. If deterioration of the environment causes diseases, thus leading to an increase in health expenses and, subsequently, in GNP, such a GNP decrease will be interpreted as a sign of growth and, therefore a drop in poverty, when in fact the population's

³ MILANO S. (1988), *La pauvreté absolue*, Paris, Hachette.

⁴ STIGLITZ J., SEN A., FITOUSSI J-P. (2009), *Vers un nouveau système de mesure*, Paris, Odile Jacob.

⁵ ROBINSON J. (1980), *Development and underdevelopment* Paris, Economica.

⁶ WOLFGANG S. and GUSTAVO E. (1996), *Ruins of development*, Montréal, Ecosociété.

real conditions and their environment have deteriorated. According to the 2010 world report on human development, there were many attempts to recalculate the figures of national income taking into account the natural capital depreciation. One of the first studies carried out to this effect, in Costa Rica, shows that from 1970 to 1990, cumulative depreciation of its forests and oil reserves amounted to over \$ 5 billion, i.e., about 6% of Costa Rica's total GNP for that period. In the case of Indonesia, the same report shows that during the period between 1971 and 1984, cumulative depreciation of forests, soils and oil resources amounted to \$96 billion, i.e., 9% of its GNP for the same period. It is, therefore, commonly accepted that the income-based monetary approach to poverty rests on a narrow idea of welfare or wellness and, because it is indirect, limits our understanding of this phenomenon to what individuals have and what they do not have. Poverty is a larger phenomenon that is apparent in different domains as various forms of deprivation and unsatisfied needs that prevent individuals from leading a normal and decent life or take part in the ordinary activities of society. (Dickes, 1989 ; Alcock, 2006 ; UNDP, 1997). For this reason, it was concluded that adopting multidimensional and direct approaches can prove more satisfactory as to how to perceive poverty, for they have a much broader objective. At this level, it is necessary to distinguish two approaches. First, the approach of situated poverty, which focuses on the prevalence of social construction of poverty since, contrary to what utilitarians pretend, we cannot isolate a phenomenon, such as deprivation, of the environment in which it occurred and developed. This broader concept, which is applied, as *a priori*, to developing countries, makes it possible to integrate certain dimensions that are not used by Townsend (1979) in the assessment of poverty, such as culture, beliefs and social capital. The second trend derives from the works of Amartya Sen (1980) on the capabilities approach, and which served as the basis for the elaboration by the UNDP of concepts of human development and human poverty. In this case, poverty is defined as a shortfall or deficiency in terms of basic capabilities likely to make it possible for a person to reach what Sen has called fulfilment or achievements. Amartya Sen's aim is to question the relevance of the « *income* » variable in the assessment of poverty. This critical examination holds true for all the different measures which, sharing this vision, perceive poverty in terms of weak or low income.

2. SITUATED POVERTY

In order to better understand situations like that of deprivation, we have tried to better understand situations like that of deprivation, we started with the following questions: Can we limit ourselves to the standard market model to understand the underlying nature of poverty? Several times, the determinism of Bretton-Wood's strategies of institutions met with the complexity of the studied fields and facts, a fact which translates into wide poverty in the poorest countries of the globe. Suffice it to remember that Amartya Sen's works confirm the reductionism of the utilitarian idea of the market as to the way of dealing of the nature and causes of the prosperity of nations. Initially, all development policies had as slogan the following slogan: « *in the name of combatting poverty as slogan* »⁷. For Hassan Zaoual, poverty is understood in a simplistic way. For experts of Bretton-Woods' institutions, the concern is a simple « *economic category* » that can be calculated from the « *income* » parameter ». However, in an investigation we conducted in the region of Sefrou (Morocco), we came up with the conclusion that poverty is multidimensional by its very nature. The assessment and analysis of poverty requires adaptation to the diversity of the studied individuals and populations. This is incidentally the reason why we have introduced the concept of « *situated poverty* ». Amartya Sen paid special attention to the principle of diversity, as is clear from its recurrence in his arguments.

⁷ ZAOUAL H. (2000), « La pensée économique plurielle : une révolution scientifique en marche », *Séminaire de culture de développement*, DEA Changement social, Université des Sciences et Technologies de Lille.

He began his work « *Rethinking Inequality* » by the following formula: « *Human beings are different from each other. We are distinguished from each other by characteristics that are not only external (inherited wealth, the natural and social environment where we live), but also personal (age, gender, vulnerability to diseases, physical and intellectual aptitudes). To determine what equality requires, it is necessary to take into account this human diversity* »⁸. The remarks of Ibn Khaldoun, « *the father of history* », clarify this point. This great historian of the 14th century, through a comparative analysis between the eating habits of the populations of Hijaz (Saudi Arabia) and those of Shanhajjas, veiled people of the South of the Maghreb, puts forward that hamine is a blessing for the life of the former so much from the physical as on the mental point of view. According to Majid Rahnema « *In general, Ibn Khaldoun argues, people who lack grains and condiments and live in the deserts are in better health than the inhabitants of the plains and heights who lead an easy life : their complexions are purer, their bodies healthier, their huamn types better porportioned and more beautiful, their behaviournot disporportionate, their faculties more receptive and more perpicacious in knowledge. It is a remark that has been confirmed for generations* »⁹. This justifies the point of view of the sitologi approach to poverty, according to which, poverty cannot come down to a general and universal formula where only the « *income* » variable intervenes, to be later interpreted as a sign of deprivation. It is the individual's life and environment that should be taken into consideration. It is, therefore, necessary to adapt economic analysis of poverty to the context of each location. According to its « *soft relativism* » principle, the situated poverty approach states that each location or site, while open to changes, exhibits peculiarities that impregnate people's individual and collective behavior within a given location.. « *Development policies made numerous « site errors » in so far as they tend to be dropped on from the summit to the base instead of favouring listening to and free participation of concerned populations* »¹⁰. The 2010 world report on human development stresses that: « *the sectors of media, information and leisure, which, thanks to their considerable means, are present worldwide, can powerfully help eradicate or, at least, reduce poverty. They shape not only information, but also new culture and values. We need values that tolerate cultural diversity and respect dignity of the poor so as to reinforce their solidarity and mobilize individuals and communities, companies and others against poverty* »¹¹. It equally stipulates that « *Well-focused strategies are necessary so that the growth model could be beneficial for the poor and so that generated resources could be invested in human potentials. Growth is not enough. La croissance ne suffit pas. On its own, it can be without regards (the losers find themselves in grinding poverty), without jobs (almost no job is created), without participation (individuals are not associated to decision-making processes), with no future (the environment of future generations is destroyed) and without roots (history and cultural traditions die out* ». Like Amartya Sen, Hassan Zaoual assumes that it is necessary that the poor have an area of freedom so that they can better act, since the crowding out (l'effet d'éviction) will sooner or later end up recurring in the form of non participation which is detrimental to economic performance and local accumulation of skills through economic projects meant to respond to the causes of poverty. According to the same author, the assumed skills of « *experts* » sustain the site stakeholders' unskilfulness. The poor, thus, are not citizens, but rather customers of institutions and social security. The latter use their expertise without solving the problems that justify their existence.

⁸ SEN A. (2000), *Repenser l'inégalité*, Paris, Seuil.

⁹ RAHNEMA M. (1991), La pauvreté globale: Une invention qui s'en prend aux pauvres, *Revue Interculture*, Volume XXIV, N° 2.

¹⁰ ZAOUAL. H. (2002), « La pensée économique peut-elle être flexible », in Granier R. et Robert R (sous la dir.), *Culture et structures économiques. Vers une économie de la diversité ?*, Paris, Economica.

¹¹ PNUD (2011), *Rapport mondial sur le développement humain 2010*, Paris, Economica.

Therefore, there is a new tendency based on the awareness of the role that local cultures and beliefs can play in combatting poverty, a fact which proves to be a first step towards a new concept of combatting poverty and which claims to be situated and therefore open on new anthropological and cultural dimensions of the concerned location. This confirms the contributions of the capabilities for which a better analysis of deprivation assumes a better understanding of the area and populations studied.

3. CAPABILITIES APPROACH

During the last few years, there has emerged a growing interest in the idea of « *capabilities* » introduced by Amartya Sen (1980, 1985, 2000, and 2003). If the Nobel Prize that Sen obtained in 1998 is a symbolic proof, it is certainly the more and more widespread use of this approach among researchers and institutions in their understanding of questions related to wellness, poverty and inequalities that is better evidence for this. The capabilities approach is based on ethical concerns related to social equity. In fact, at the beginning of his reasoning, Amartya Sen poses the question of what attribute a society should equalize to achieve social equity. Starting from a thorough and well-founded criticism to the proposals of the two dominating ethical approaches at the time, i.e., utilitarianism (Bentham, 1789) and Rawlsian theory of equity (Rawls, 1971), he suggested a space of functionings and capabilities, such as adequate assessment of questions related to welfare, poverty and inequalities. Thus, in the field of social equity, this approach constitutes a new paradigm and a real alternative to utilitarian orthodoxy. The capabilities approach is an expanded and normative framework for the assessment of issues related to individuals' welfare, social arrangements, policy implementation and societal changes based on individuals' actual ability to do or to be something and the scope of freedom they enjoy to promote and achieve their objectives. This approach starts from the simple remark that an individual's living standard is directly related to the different states and acts they can accomplish or achieve. Sen makes use of the term "*functionings*" or achievements to refer to these states and acts that individuals effectively attain. For Sen, « *the thesis is that functionings are constituents of the person's existence and that the assessment of their welfare should necessarily be a judgment of these components* »¹². The ability to function constitutes all the real opportunities the individual is offered and represents the various combinations of functionings (states and actions) that the individual can accomplish. Capability is, therefore, a set of vectors of functionings which indicate that an individual is free to lead this or that type of life. Thus, on the conceptual level, the main innovation of the capabilities approach is the adoption of an expanded informational space, wider than that of the traditional approach, to deal with a set of normative questions (Farvaque, 2003). As is stressed by Robeyns (2005), the two focal points of this approach are the focus on the distinctions between means and ends, on the one hand, and between real freedom (capabilities) and functionings (outcomes), on the other. Resources are goods and services (commodities), be they mercantile or not, that the individual has at their disposal, as, for instance, food or a bike. These goods have an instrumental value rather than an intrinsic or inherent value, for what really matters is the way we can use them. Also, like Gorman (1956) and Lancaster (1966), Sen (1985a) draws a line between resources and their characteristics which constitute their desirable properties and determine the uses to which the good can be put. It is these functionings that constitute the intrinsic value. A bike enables its owner to move; food does not only make it possible to satisfy hunger, but also brings the pleasure to eat and to create a social support through the organization of meals (Sen 1985). Therefore, the characteristics of goods (bike) provide individuals with the possibility to implement the related functioning (movement).

¹² Sen A. (1999), *L'économie est une science morale*, Paris, La Découverte.

However, Sen (2003, 150) points out that there is nothing automatic, permanent or inevitable about the relationship between income (and other resources), on the one hand, and individual achievements and freedoms, on the other. In fact, owning a good is different from the ability to benefit from its characteristics. It is not enough to know the quantity of food an individual has to judge the way they are fed. Sen's well-known example is that of an individual suffering from a parasitic disease that makes the digestion of food difficult. This person can suffer from malnutrition, even if they have at their disposal a quantity of food that would enable an individual without such disease to be well fed. Thus, information of goods ownership proves insufficient to judge someone's living standard or welfare, for it does not take into account of the relationship between goods and functionings. To be able to take account of such contingent relationship, Sen introduces, at the heart of his approach, a set of internal and external conversion factors, which determine the possibility to convert the characteristics of resources into functionings. First of all, such transformation will be influenced by personal conversion factors related to the individual's internal characteristics (physical, intellectual aptitudes, metabolism, etc.). A person suffering from physical disability will not be able to achieve the characteristic « *movement* » that the good has « *bike* ». In the case of food, metabolism, age, gender, activity level or health conditions are conditions that will influence the way the individual will indeed convert resources (food) into functionings (to be well-fed). Besides, age and gender determine specific needs that income does not take account of (young children, old people, maternity, family obligations). The other conversion factors are external and highlight the influence of social characteristics (politics, social norms, power relationships) and environmental characteristics (climates, infrastructures, public goods) may exert. A country's social rules and traditions may constrain women's behavior, thus reducing all their potential functionings. Likewise, riding a bike may depend on climatic conditions and usability of a country's roads, the ability to be well-fed may depend on drought or flood problems and the ability to be in good health depends on risks of contagious diseases in the region of residence. Therefore, taking account of these different conversion factors will make it possible to consider interpersonal variations, which enables individuals with identical resources may have two different living standards. This last point is particularly important within the framework of the elaboration and assessment of public policies aiming at reducing poverty (Sen, 2003). In the course of Sen's reasoning, it is important to understand the distinction between functioning and capabilities. Functionings are individuals' different states and acts. They form what a person, given a set of conversion factors, can do or be. They can be elementary (i.e., to be well-fed and in good health) or complex, such as the ability to take part in community life, take a rest, be respected, have self-esteem, etc. Assessment of welfare, therefore, takes the form of an assessment of functioning vectors (i.e., individuals' valued states and acts). Reference to functionings makes Sen's approach a direct and multidimensional one. Indeed, although he considers that an individual's welfare should depend deeply on the nature of their existence, that (i.e., accomplished functionings), at the heart of his approach, he places capabilities rather than functionings. As is highlighted by Robeyns (2003), while a functioning is an achievement, a capability represents the possibility of achievement and refers to all potential functionings. Consequently, Sen's emphasis is not on what people have or do, but on what they have the choice to do or do not have the choice to do. Based on all the characteristics of the resources at their disposal and on the conversion factors, an individual can determine vectors of potential functionings that represent the different combinations of potential functionings they can achieve. This set represents all the individual's capabilities and gives an image of the scope of the choices at their disposal. It, therefore, precedes all functionings which constitute all the states and acts that an individual achieves. Moving from the space of capabilities to that of functionings is shown by the individual's real choice, which, in turn, depends on the individual's history as well as on the mechanisms of preferences; these mechanisms themselves

depend on the social context. In Sen's view, functionings are more related to living standards, whereas capabilities result in a dimension of freedom and choice. In fact, capabilities refer to an individual's real freedom and real opportunities, and the freedom, in the positive sense of the term, which an individual has to promote or achieve a functioning they would like to enhance. To illustrate the importance of the difference between capability and functioning, we can cite the example of two people who cannot sufficiently provide for their needs in terms of food. However, one is a person suffering from famine whereas the other is a person who has chosen to be on hunger strike as a sign of protest. Regarding the good "*food*", both people realize the functioning of being "malnourished", but not through the same path.; while one of them was forced into such a situation, the other one has made a choice. The notion of choice is not easy to understand. One finds the same questions asked in works on deprivation in which involve determining whether choices are forced or deliberate. Based on these considerations, Sen suggests a distinction between living standard, welfare and « *agency* ». For him, the living standard is the broadest notion and is connected with information related solely to the individual. The difference between the living standard and welfare emerges from the possible influence of external sources on a person's welfare. Thus, pain (joy) caused by sorrow (happiness) of a relative reduces (increases) welfare, but does not affect the living standard. Agency is much broader and rests on the idea that an individual can have objectives and values other than the search of their personal comfort. An example is a person's commitment towards the issues of their community through the participation to anti-globalization protests, being persuaded that this globalization has harmful effects (Robeyns, 2003). These various concepts constitute the backbone of the capabilities approach, of which the use, as a framework of thought, is very wide and is confined to studies of poverty. The capabilities approach to poverty constitutes a way to move from the analysis of means to the analysis of ends. In this context, Sen (2003, 36) considers that « *it is just to consider poverty as deprivation of the basic capabilities, rather than merely a low of income* ». This definition of poverty refers to a shortfall or deficiency of basic capabilities. The latter constitute a subset of the set of "capabilities" and refer to the freedom to achieve basic things that are necessary to survive and to avoid or escape poverty. Thus, while capabilities can cover a vast and varied field, basic capabilities refer precisely to the real possibility to avoid poverty. They concern the ability to satisfy minimum and adequate levels of certain crucial functionings. The identification of these minimum and acceptable levels constitutes the basis of Sen's approach to poverty. For Robeyns (2005, 101), basic capabilities are crucial to analyze poverty and, in more generally, to study the welfare of the majority of the population in a developing country, whereas in rich countries, welfare focuses rather on capabilities that are more or less necessary for physical survival. The capabilities approach is the development paradigm that is underlying the concepts of human development and poverty introduced by the UNDP (1990, 1997). One of the major changes that this new paradigm offers is the possibility of analyzing the different questions regarding poor countries and individuals within a flexible framework, rather than imposing political or other prescriptions in the name of a rigid neoliberal orthodoxy (Fukuda-Parr, 2003). Within the framework of this approach, human development is geared towards the expansion of capabilities, whereas human poverty reduction involves ensuring that individuals who should have to primary resources have a set of basic capabilities likely to help them achieve these resources. The main difference between the concepts of human development and human poverty is that the former focuses on the living conditions of all individuals in society while the latter lays emphasis on those of poor individuals. Thus, as part of the overall view of human development, the disadvantages of the poorest people can, in an aggregated level, be made up for by the gains of the well-to-do ones. The concept of human poverty and poverty indices were introduced in order to focus on the situation of the most underprivileged people.

In this case, lack of progress in the reduction of disadvantages of people in deprivation cannot be made up for by the significant progress of the well-to-do. Subsequently, Anand and Sen (1997) consider that the two approaches are useful for understanding the development process, and that they are not exchangeable. The human poverty approach was introduced by the UNDP's 1997 Human Development Report. This report seeks to focus on the challenges of poverty eradication in the world with a view towards human development.. For this purpose, it does not simply focus on poverty, in the monetary sense of the term, but rather on a multidimensional approach to poverty. (Anand and Sen, 1997). It draws its inspiration, to a large extent, from Sen's capabilities approach, as is shown by the introductory phrase of the first chapter of the 1997 Human Development Report., which stipulates that « *It is the deprivation lives that people may lead that poverty can be seen. Poverty implies not only low income or deficiency in elements necessary to well being, but also denial of and deprivation in opportunities and basic choices for living a tolerable life* ». These choices and opportunities refer to basic capabilities. This means that, in this approach, poverty is not merely a state of deprivation currently lived by an individual, but also the absence of real opportunities, due to social constraints or to personal characteristics, for living a life that they reasons to valorize. Nevertheless, with poverty being a state that everyone one wishes to avoid, it may be said that its study can disregard this notion of freedom and focus on the individual's real functionings. This approach largely exceeds the physiological model of deprivation, for « *capabilities* » mean, « *to be in good health, have access to knowledge, have access to resources necessary to have a decent standard of living and be able to take part in the community's social life* » (PNUD, 2001). From a political point of view, the objective is, therefore, the « *removal of obstacles in what one can do in life, obstacles such as illiteracy, diseases, insufficient access to resources, or insufficient political and civic rights* » (Fukuda-Parr, 2003). Fukuda-Parr (2003) evokes a five-point strategy for development and poverty reduction: (1) give priority to social development with a spread of opportunities of education and health care., (2) economic growth creating resources for multidimensional human development, (3) social and political reforms in view of establishing a democratic governance to secure all people's rights, (4) foster equality in the three preceding points, namely for the poorest people (5) global political and institutional reforms to create an economic environment where access to markets, technology and information would be easier for poor countries. Within these diverse components, one can notice the rise of the concept of empowerment (World bank, 2000 ; Narayan, 2002) and the increasingly accrued taking into account of questions related to gender equality. The capabilities approach has led to clear conceptual advances in the field of poverty studies, both as to the debate on the absolute or relative aspect of poverty and as to its role in the appearance of the concept of human poverty. These conceptual advances are nevertheless are confronted with important operationalization problems, which are partly due to the scope of this approach.

4. OPERATIONALIZATION OF THE CAPABILITIES APPROACH

The great riches and complexity of Sen's approach are not easy to express empirically, for the capabilities approach is much more demanding on the informational and methodological level than on the monetary level of poverty. If for some people, the problems facing this approach seem to be insuperable, for others they are simply a reflection of the intrinsic and irreducible complexity of the concepts it makes possible to understand. Such is Chiappero Marinetti's (2000) point of view, who stresses that the empirical applications of the capabilities approach require an adequate space for the evaluation of capabilities (or functioning), a pertinent list of capabilities and functionings, a set of indicators for each of the dimensions of wellness taken into account, the way, if necessary, to combine the elementary indicators to obtain an assessment on each dimension of wellness and the way to add information on the different dimensions and achieve a comprehensive assessment of wellness.

Assessment of capabilities requires that, on the one hand, valuable items be selected and, on the other hand, the value of these items be determined (Sen, 2000). In fact, beyond the preceding, there emerges the problem of the list of elements to consider and their relative importance. This question is related to the horizontal imprecision of the capabilities approach. Sen's reference to the different states and acts, which a person has reasons to valorize suggests that this approach is inherently multidimensional and refers to a multitude of functionings/capabilities, which can impact individuals' wellness. In the case of the study of poverty, confining oneself to a set of basic functionings makes it possible to limit their number. However, even at the level of basic functionings, Sen's capabilities approach does not provide a list of functionings/ dimensions, nor does it provide a clearly defined selection method. This question is of paramount importance and is recursively at the heart of the current debates on the operationalization of this approach (Robeyns, 2005). Indeed, although Sen's theory is theoretically attractive, as long as one does not have clearly defined criteria for the selection of value functionings, one will face a series of criticisms. In particular, the absence of a list makes Sen's approach is not fully specified. Absence of a list makes Sen's approach not completely specified. For some researchers, this incompleteness poses a problem. Nussbaum (2003) considers that as long as Sen has not explicitly determined a list, his approach will lack percussion. Alkire (2001, 2002) shares the same point of view. She considers that lack of a procedure for the identification of pertinent capabilities (dimensions) makes the implementation of this approach difficult. These two authors agree that, in this case, the approach may be not understood and may give free reins to all sorts of deviations. In fact, without a list or a transparent selection method, numerous works aligning themselves with this theory may adopt different approaches or steps, which will lead to more confusion than clarity. Other authors leveled stronger criticisms. Townsend (1985, 667), for instance, argues that the absence of scientific criteria for the selection of dimensions is « *scientifically unacceptable* ». For him, « *one should consider the question of knowing how capabilities are selected and in what way they are absolute* ». In the same vein, Sugden (1993) raises the following question: « *given the large number of functioning that Sen considers as pertinent, given the scope of disagreement between reasonable people as to the nature of what is a decent life and given the unsolved problem of the way in which sets should be assessed, it is natural to raise the question of knowing the extent to which Sen's framework of analysis is operational* ». In reply to these criticisms, Sen admitted that it is necessary not only to identify the capabilities and classify them into the most central ones and the most trivial ones, but also to assess their relative weight. However, he thinks that any subsequent specification on his part would be controversial. In fact, while he is not averse to the idea of determining that, in some specific cases, certain capabilities are more important than others, he refuses to endorse the a predetermined and definite list of capabilities. The reason for this is that the capabilities approach is not confined to a sole objective. It was elaborated as abroad framework of thought. Consequently, Sen believes that each application necessarily depends on its context and it for this reason that his approach was deliberately incomplete. The selection of capabilities should therefore be geographically contextualized. Thus, from a methodological point of view, « *they are applications to specific questions, context-sensitive and limited by data, which can give birth to a pertinent list* » (Farvaque, 2003). Besides, the elaboration of the list pertains to a value judgment that should be explicitly made through a democratic and participative method. It is not the work of a theorist. It is, therefore, clear that if the malleability of this approach makes it evasive in the eyes of certain people, Sen considers it as an asset and thinks that this approach cannot be made more specific without carrying out a universal assessment, which will make it possible to choose the valuable items and their relative weight. Thus, while this incompleteness is the point which leaves this approach wide open to the most ferocious criticisms, it is one of the reasons of its success.

If he refuses to give a list of basic functionings, Sen nevertheless lays tracks that will help understand the scope he intends to give to his approach. These tracks are in the form of domains that one can take into consideration and the form of two selection criteria, based on consensus, which will make it possible to select the set of pertinent, basic capabilities without having recourse to value judgments.

5. CONCLUSION

In spite of incompleteness that Ammatya Sen's approach exhibits, it should be nevertheless admitted that any poverty reduction policy that does not take into consideration the capabilities of individuals or groups of population increases deprivation. In other words, any person's emancipation and « *well being* » depends on their capability to change their situation. Increase in income does not automatically lead to the improvement of « *well being* » when the individual as well as their environment are not able to develop relying on their endogenous capabilities. Therefore, the problem lies in the inadequacy and not the lowness of income. Having an adequate income does not mean having an income that is inferior to a poverty threshold set from outside. Instead, it is having an income lower to what a person should have to ensure a specific level of capability. This means that, to analyse poverty, one should not confine oneself to data on income¹³; it is necessary to pay particular attention to the diversity of environments and social phenomena. According to Sen, « *Ana analysis of poverty based solely on income will only say half the truth* ».

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¹³ Instead of measuring poverty based on income, Sen suggests calculating one can achieve with this income, while taking into account the fact that these achievements can vary from one individual to another and from one place to another. Otherwise, how can we explain that there exist poverty pockets inside middle classes in rich countries?

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COMPARATIVE ANALYSIS OF HEALTH FINANCING MECHANISMS IN SELECTED EUROPEAN UNION MEMBER STATES

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ABSTRACT

The present work presents various key aspects regarding the systemic and administrative-organizational implementation of health financing in the European Union. In the context of the current financing models in selected member states, the purpose of the analysis is to highlight the national specifics and peculiarities of the health care systems, with an emphasis on the fundamental differences in the mechanisms used. Regardless of the presence of the latter, they all function subordinated to their main idea - providing universal access to high-quality healthcare at an affordable price for members of society. The purpose of the research is a conditional comparison of the parameters and mechanisms of the financing models in Bulgaria and the selected European countries. For its implementation, we simultaneously summarize the results of the analysis, fix the place of the Bulgarian model in the European health area and mark possible guidelines and good practices, from the introduction and implementation of which, we can only draw positives.

Keywords: *Healthcare, Financing, European Union, Costs, Health Insurance, Health Insurance, Hospitals, Health Care, Health Index*

1. INTRODUCTION

The purpose of the present analysis is to present the healthcare financing mechanisms in selected member states of the European Union. We must first clarify the reason for the conditional limitation of the study, reducing the same to the specific choice of national health care systems - the object of the analysis. The selection of EU member states follows the idea that they are from the so-called old member states and, respectively, from the later joined (post-socialist countries). The logic and design of each particular choice is dictated by the following: 1) Germany and France are models of financing through social health insurance funds and are leading European economies; 2) The Netherlands is the country - pointed to as an example in health care not only in Europe, but also in the world, with a very close to the market model of health care; 3) Sweden develops a specific budgetary decentralized model of health care organization and financing "Scandinavian type"; 4) Spain practices the so-called „southern“ variant of the Beveridge system; 5) The Czech Republic demonstrates superior results compared to other CEE countries; 6) Latvia preserves and continues to develop the budgetary form of financing; 7) Romania is an example of a country that allocates the least funds as a percentage of GDP to health care and has the lowest per capita health care expenditure among all EU members, and 8) Slovenia holds the leading position according to the indicator "average life expectancy of the population" in 2021 among post-socialist countries. In our opinion, we believe that the choices made are the main variants of basic models for financing healthcare in the EU member states.

The Republic of Bulgaria is deliberately not included in the presentation of the models, but only the financing parameters are used for comparison in the final part to show on the one hand its place (according to different classification signs) and on the other hand to see the directions for improvement of the financing of native health care.

2. EU MEMBER STATES WITH DEVELOPED MARKET ECONOMIES

Germany, as Europe's leading economic power, allocated 12.8% of GDP to health in 2020 (above the EU27 average of 10.9%) (Eurostat. Healthcare expenditure statistics, 2022). Total health expenditure at current prices¹ in 2020 amounts to € 431.805 million. Per capita annual current expenditure amounts to € 5192 and at purchasing power parity € 4831 (EU- € 3269). The Federal Republic also allocates 19.8% of total public expenditure to healthcare (WHO. Global Health Expenditure. Database, 2023). The funding of health care is based on compulsory health insurance (76.1%), followed by personal payments for medical services to citizens (12.4%), the state budget - 9.0% and voluntary insurance in private insurance companies - 1.3% of the funds (Eurostat. Healthcare expenditure statistics, 2022). Since the turn of the century, there has been a steady increase in current health spending as a percentage of GDP. For the period 2000-2010 this share has increased by 16.7% and for the period 2010-2020 by 14.3% (Blumel, M., Spranger, A., Achstetter, K., Maresso. A., Busse, R., 2020, p. 98, Eurostat. Healthcare expenditure statistics, 2022). In Germany, the world's first health insurance (SHI) system was introduced as early as 1883, and the basic principles of the Bismarckian system of healthcare organization have been preserved in the country. Insurance is provided by legally established health insurance (Ninova, V.&Ninov, N., 2023) funds (insurance funds) with the status of autonomous non-profit organisations (Gesetzliche Krankenversicherung - GKV) and private insurance companies (Private Krankenversicherung - PKV). In 2018, 87% of the population (about 72.2 million people) had health coverage in compulsory health insurance, 10.8% or 8.7 million people in private insurance, about 2% coverage under special programs (mainly military personnel), and 0.08% of citizens were uninsured (Blumel, M., Spranger, A., Achstetter, K., Maresso. A., Busse, R., 2020, p. 79-80). Insured persons have the right to change their insurance companies annually if they wish. Around 3% of compulsorily insured persons also take out insurance with private insurance companies, thus supplementing and expanding their range of health services. Health services in compulsory insurance are defined by legislation. They cover a wide range of health services such as medical emergencies, diagnosis and prevention of diseases, outpatient and inpatient treatment, prescription drugs, payment of benefits for temporary disability, termination of pregnancy, childbirth, maternity, death, etc. The amount of the contributions is not linked to the risk of illness, is calculated based on the income received and is around 14.6% of gross monthly income. Employees and employers contribute an equal share (50% each) of the contributions. There is an upper monthly income limit above which contributions are not charged. In the case of the compulsorily insured, in addition to the insured person, the contribution is also valid for their family members. The State covers the costs of a certain number of socially disadvantaged persons through subsidies. The funds flow into a health fund at the national level and are distributed to health insurance funds taking into account the age, sex and health status of the insured. Public insurance companies (Ninova, V., 2018) based on contracts, make payments to health service providers (hospitals, doctors).

¹ Current expenditure includes all economic resources devoted to health, excluding capital investment, Eurostat. Healthcare expenditure statistics, 2022, p.15, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Healthcare_expenditure_statistics, online publication. They include the final consumption of health goods and services, including private (hospital and rehabilitation care, medical devices, etc.) and collective consumption (prevention and public health care, administrative costs).

As for most European countries, in contrast to the USA, Australia, etc., the contribution of private insurance companies to health care financing is symbolic. The amount of their contributions does not depend on the amount of income, it is determined individually and depends on the package of medical services offered and the health insurance risk, taking into account the age, gender, occupation, and health status of individuals. Medical services are guaranteed within the scope of the contract, and the funds are intended only for the treatment of the insured. In general, private insurers offer a larger package and better quality services than public insurers. The insured pay the medical providers themselves and the insurance companies reimburse the amounts paid. For hospital stays, surgeries, etc., the insurer usually pays the providers itself. Under the equivalence principle adopted, unused monthly contributions are invested in the capital market and generate income for the insured. The private health insurance system is only available at a certain income level (above € 57,600 annual income) and covers business owners, freelancers (lawyers, doctors, architects, etc.), military and civil servants on a contract basis, who have the right to choose between public and private health insurance². Germany is the only country in the EU where ambulatory care providers absorbed a larger share of total current healthcare expenditure than hospital care providers - 31.4% and 28.8%, respectively - which does not mean that those ranked in one provider group only carry out the care typical of the group. The functional distribution of current healthcare expenditures in 2020 shows that almost half of the expenditures, 49.6%, were for curative and rehabilitative services, followed by long-term healthcare expenditures³ of 19.6% and for the purchase of medical devices⁴ 18.2%. The remaining 12.6% is allocated to support services, health system management and administration of financing and preventive care (Eurostat. Healthcare expenditure statistics, 2022, p.15). The payment mechanisms for health services are different for compulsory and supplementary voluntary health insurance systems. Under the compulsory insurance system (Ninov, N.& Ninova, V., 2024), payment to general practitioners and outpatient specialists is on a capitation basis for the number of registered residents and fee-for-service, to other outpatient care providers through fee-for-service. In critical care hospitals, payment is per case by LTCF, and those for ambulatory care capitation or fee-for-service. Dental care is also paid through fee-for-service. Payment by private insurers everywhere (except public health and pharmaceutical services) is by fee-for-service, except in critical care hospitals, where costs are reimbursed by payment per case under the DSA (Blumel, M., Spranger, A., Achstetter, K., Maresso. A., Busse, R., 2020, p. 98). **France.** According to Eurostat, the country ranks second (after Germany) among the EU-27 in terms of the share of GDP allocated to healthcare, with the two countries only crossing the 12% threshold - Germany 12.8% and France 12.2% (Eurostat. Healthcare expenditure statistics, 2022). In 2020 and 2021, the country's healthcare system is ranked first among 36 countries in the European Healthcare

² On the financing of the health system in Germany, see details: Blumel, M., Spranger, A., Achstetter, K., Maresso. A., Busse, R., 2020, p. 69-108, and for the payment mechanism 98-108, Germany. Health system review. Health Systems in Transition, Vol. 22, № 6, 2020, <https://iris.who.int/bitstream/handle/10665/341674/HiT-22-6-2020-eng.df?sequence=1> ;Busse, R, M. Blumel, F.Knieps, T. Barnighausen (2017). Statutory health insurance in Germany: a health system shaped by 135 years of solidarity, self-governance, and competition, Adobe Acrobat: PDF edit, convert, sign tools/chrome-extension://efaidnbmnnpbpcjpcgclchhindmkaj/https://www.thelancet.com/action/showPdf?pii=S0140-6736%2817%2931280-1;Germany Private Health Insurance (2021), thegermany.com/germany_health_insurance; Thomson, S., et.al, Health financing in the European Union. Challenges and strategic solutions, 2010, www.euro.who.int/__data/assets/pdf_file/0016/126025/e92469R.pdf

³ Long-term health care includes all medical and personal care related to the follow-up and care of people with chronic diseases and disabilities who have difficulty caring for themselves. It aims to relieve pain and suffering and reduce or manage the deterioration of the health status of patients with long-term dependency (Eurostat. Healthcare expenditure statistics, 2022, p.15).

⁴ Medical devices include therapeutic devices and other durable medical equipment, pharmaceuticals and other medical perishables (Eurostat. Healthcare expenditure statistics, 2022, p.15).

Quality Index (Europe: Health Care Index by Country 2020, Europe: Health Care Index by Country 2021). The main source of financial resources in 2020 is public social security funds - 78.5%. The share of personal direct payments to citizens in the financing is 8.9% and of the budget - 6.2%. The share of current health expenditure in total public expenditure is 15.2% (WHO. Global Health Expenditure. Database, 2023). On a per capita basis, current health expenditure amounts to €4,160 and on a purchasing power parity basis to €3,807. Over the period 2015-2020, current expenditure on health increased by 11.7% (Eurostat. Healthcare expenditure statistics, 2022). In France, excise duties on alcohol, and tobacco, and taxes on pharmaceutical laboratories are directly earmarked for health. The attention paid to health care is evidenced by the fact that spending since the beginning of the new century has been growing not only in absolute terms but also as a percentage of GDP. For example, the absolute amount of spending from 2000 to 2010 grew by 50.6%, and from 2010 to 2020 by a new 35.1%, while spending as a percentage of GDP from 2000-2010 grew by 16.7% and from 2010-2020 by 8.9%. (Or, Z., Gandre, C., Seppanen, AV., Hernandez-Quevedo, Cr., Webb, E., Michel, M., Chevreul, K., 2023, p. 46). France is a typical example of a Bismarck model health system. The country provides equal access and the right to health services for all citizens, there is universal coverage of the population by medical services, solidarity participation, patients have the right to choose where and who treats them, competition in the sector is regulated with regulation and control of health services by the state. Health insurance (in compulsory schemes or voluntary) is compulsory for all citizens and foreigners residing in the country for more than three months. Citizens can be insured in the National Health Insurance Fund or separate insurance funds covering representatives of agricultural workers, miners, seamen, transport workers, independent professions, etc. There are numerous health insurance funds (funds) with equal status, regardless of the form of ownership - public or private. Contributions to the universal health insurance fund (Couverture Maladie Universelle - CMU) are deducted from workers' wages at a rate of about 8% of gross monthly earnings and a supplementary payment by employers of about 13% (Афанасьев, С, 2022). There is no limit on the amount of income on which the insurance is charged. The general health insurance scheme covers civil servants, over four-fifths of private sector workers, legal residents in France and the uninsured with coverage elsewhere. The state pays social security (Terziev, V., 2024) contributions to the socially disadvantaged in a difficult financial situation and need of long-term treatment and rehabilitation. Compulsory public insurance covered in 2020 92.8% of the costs of medical services of hospitals (Les depece de sante en 2021. Resultats des comptes de sante, 2022), which are the main provider of medical services with a share of 38.9% in 2020 (Eurostat. Healthcare expenditure statistics, 2022). More than half of the expenditures were for medical and rehabilitation services - 51.6%, about one-fifth - 19.4% for medical devices and for long-term health care - 16.5% (Eurostat. Healthcare expenditure statistics, 2022). In addition to the universal health insurance package, coverage of additional risks is provided through voluntary health insurance (assurance complementaire - so-called mutuelle) in private insurance companies. Around 90% of the population takes out supplementary insurance, but the share of private insurance funds as a source of health financing in 2020 is only 5.3%. Compulsory and voluntary insurance covers 83.8% of annual current health care costs. Fundraising is centralised in a nationwide fund, and distribution is centralised, with funds allocated to health care in private practices, public hospitals (hopitaux), private hospitals (cliniques), medical centres (centres de sante), and social care. By form of ownership and ultimate purpose, hospitals are public (general, regional, local) and private for-profit and not-for-profit (owned by foundations, religious organisations, etc.).

In 2020, public hospitals provided more inpatient services and spent 3.59 times more of the funds compared to private⁵ (Calculated by: DREES. Les dépenses de sante – en 2020. Resultats des comptes de la sante. Edition 2021, p. 9). In public hospitals, to equalize health risk, allocations are made according to age, gender, hospital stay, and patient flow between regions. Government hospitals are funded on a pay-per-case basis and private hospitals are on a bed days of patients passed. The financing mechanism of private for-profit hospitals is in line with the cost of building stock, routine care, medicines, and the level of equipment with which diagnostic and therapeutic processes are carried out. Hospitals are not in a contractual relationship with the insurance funds, the money goes with the patients and the health funds pay the patient's chosen facility. The payment of hospital specialists is in the form of a salary. In France, emergency care, expensive treatments, life-saving drugs and medical services related to accidents and occupational diseases are free for the population. The main problems of the health system are the deficits and cost overruns of medicines⁶. GP pay is a combination of capitation for the number of citizens enrolled, fee-for-service, and pay for performance (quality, etc.) or salary (approximately 35%). For outpatient specialists, payment is fee-for-service and pay-for-performance, and for other outpatient providers, fee-for-service for those self-employed with their practice or salary for those in health centres. In ambulatory care hospitals, payment is per service (procedure, manipulation, test, etc.) and in critical care hospitals, payment is per activity plus pay for performance. Post-intensive and rehabilitation services are paid through a global budget plus activity payment, and dental care through fee-for-service or salary in dental centres (Or, Z., Gandre, C., Seppanen, AV., Hernandez-Quevedo, Cr., Webb, E., Michel, M., Chevreul, K., 2023, p. 71). **Sweden** is representative of the institutional or "social democratic" Nordic model of a Beveridge-type health system. The country is also known for its high degree of decentralisation of health care. The organisation of health care is mainly the responsibility of the county councils (landstiege) and independent municipal (municipal) authorities. The county councils are responsible for inpatient care, outpatient health care, and planning and financing of health care facilities in the region, while the municipalities are responsible for the provision of certain health services such as care for the elderly in residential and nursing homes, school health care, care for the physically handicapped or mentally disordered, etc. The state in the form of the Ministry of Health and relatively independent administrative agencies such as the State Council for Health and Social Insurance, the Drug Administration, the State Institute for Public Health, the State Council for Social Insurance, etc., perform regulatory functions, form the strategy and principles of health policy, control and regulate the work of regional and local authorities in the field of health care (Swedish healthcare is largely tax funded. And the overall quality is high, 2023). In 2020, Sweden has earmarked 11.4% of GDP for healthcare. Sweden is behind only Germany, France and Austria in terms of the share of health spending in GDP, and only Germany and Ireland in terms of the relative share of spending in total public expenditure. Over time, health expenditure as a percentage of GDP has increased from 8.3% to 11.4% between 2010 and 2020.

⁵ Calculated by: DREES. Les dépenses de sante – en 2020. Resultats des comptes de la sante. Edition 2021, p. 9.

⁶ For France's health spending in 2020, see: Gonzales, L., Lefebvre, G., Mikou M., et Portela M. (2021), Les dépenses de sante en 2020. Resultats des comptes de la sante, p. 104-139. For more on healthcare financing, see Or, Z., Gandre, C., Seppanen, AV., Hernandez-Quevedo, Cr., Webb, E., Michel, M., Chevreul, K., 2023. France. Health system review. Health Systems in Transition, Vol.25, №3, 2023, p. 42-84, and for the payment mechanism 71-84p <https://iris.who.int/bitstream/handle/10665/371027/9789289059442-eng.pdf?sequence=4>; Republique frangaise. Ministère de la sante et de la prevention. Le financement de la sante publique dans le France (2021), <https://www.vie-publique.fr/fiches/le-financement-de-la-sante>; Republique frangaise. Ministère de la sante et de la prevention. Reforme le financement pour encourager qualite et cooperation (2022), <https://sante.gouv.fr/systeme-de-sante/masante-2022/article/reforme-le-financement-pour-encourager-qualite-et-cooperation>; The world health report: health systems financing: the path to universal coverage (2010), 106 p., iris.who.int/handle/10665/44371;

Per capita health spending at current prices in 2020 was €5,282. At current prices per capita, health expenditure increased by 192.1% between 2000 and 2020, including 80.0% between 2010 and 2020 (Janlov, N. et.al, 2023). 18.8% of total public spending is also allocated to health (WHO. Global Health Expenditure. Database, 2023). Health care is mainly financed by three sources - taxes (central, regional and local), the state health insurance system and private funds - paid medical services and private medical insurance. 85.9% of healthcare funds in 2020 are provided by the state, while the remaining financial agents raise 14.1% of current healthcare expenditures. By source, funds from other financial agents are structured as follows - 13.0% from personal payments by citizens, 0.6% from voluntary health insurance, 0.1% from non-profit organisations and 0.4% from the business sector (Eurostat. Healthcare expenditure statistics, 2022). The main source of funds is tax receipts of regional councils (64%) and municipalities. Regional councils have the power to set their tax rates and over 80% of income tax receipts are earmarked for healthcare. Private healthcare exists in two types. In the first, health services are provided by private health facilities under contract with county councils or municipalities. In the latter, the cost of health services is identical to that of public health care. In the second type, private healthcare providers do not have a contract with the NHS and patients pay the full cost of treatment and care (About the Swedish healthcare system, 2020). Health insurance is also highly decentralised universal and compulsory. Coverage includes hospitalizations and basic outpatient services; admissions to general practitioners and specialists; transportation costs associated with receiving medical care; prescription drugs, dental care for up to 23 years of age, preventive health check-ups, rehabilitation, support for people with disabilities, home nurses (Glenngard, A., 2020). Contributions are shared on a percentage basis between employers and employees, to equalise contributions on a parity basis. Private voluntary health insurance is of peripheral importance, providing only 0.6% of the funds. The funds raised from central taxes go to the Ministry of Health, and from regional local taxes to county and municipal councils. The county councils' funds are also supplemented by central tax receipts in the form of core and earmarked grants, the share of which for 2020 is 22% (Janlov, N. et.al, 2023). Targeted allocations aim to equalize risk and depend on the number, sex-age composition, marital status, and income level of the population in the regions. Inpatient medical care is provided in numerous district and municipal hospitals, which are mainly owned by district and local authorities. Dental care does not belong to the general health care system. It is free of charge for persons up to the age of 23 and subsidised by the state for those aged 24 and over (Swedish healthcare is largely tax-funded. And the overall quality is high, 2023). In Sweden, hospitals are the main provider of healthcare services with a share of 39.7%. Outpatient providers are the second most important provider of healthcare services with a 23.8% share of expenditure. The share of long-term care residential care facilities was 18% in 2020 and medical device providers 10.8%. By function, the distribution of health spending for 2020 shows that 51.1% of spending is allocated to curative and rehabilitative care, of which 20.7% is for curative and 30.4% for rehabilitative. The share of medical devices in expenditure in 2020 was 12.2% (vs. 18.2% for the EU27). Sweden significantly outperforms the EU27 average for long-term healthcare expenditure, 26.2% and 16.6% respectively, and is second only to the Netherlands on this indicator. For laboratory tests, patient transport and other ancillary services, Sweden's share is almost equal to the EU27 average (4.9% and 4.8% respectively). The proportion is similar for expenditure on preventive care, 3.3% and 3.4% respectively. (Janlov, N. et al, 2023). Contracts are concluded between the regional health management institutions and the hospitals, defining the volumes, prices and quality of medical services. The price lists of health facilities are updated annually. Private doctors also work under contract with the regional and municipal councils. Payment for primary care provided is a combination of capitation for the number of individuals (over 90%), fee-for-service (5-10%) and performance bonuses for meeting quality targets, reserving earmarked funds for

programmes, etc. The payment mechanism for hospitals for inpatient care is a global budget based on a per-case payment based on diagnostically related groups and a total global budget. For ambulatory care hospitals, a global budget, pay-per-case and fee-for-service are used. Payment for dental care is on a fee-for-service basis (Janlov, N. et.al, 2023, p. 84)⁷. **Netherlands** is the country that since 2005 has consistently been in the top three in the overall ranking of the European Health Consumer Index. In 2023, the country is first on the index among EU countries, only surpassed in Europe by Switzerland (Euro Health Consumer Index by country, 2023). In 2016, the Netherlands achieved the highest score ever in the history of the index - 927 points out of a possible 1000 (Euro Health Consumer Index, 2016)⁸. In 2020, the Netherlands has earmarked 11.1% of GDP. It ranks sixth in the EU-27 after Luxembourg, Denmark, Germany, Ireland and Sweden in terms of annual per capita spending on health in the same year at €5,108, and second after Germany in terms of per capita spending in purchasing power parity terms at €3,269 (Eurostat. Healthcare expenditure statistics, 2022). 16.1% of total public expenditure was also allocated to health (WHO. Global Health Expenditure. Database, 2023). The main sources of funding for healthcare in 2020 were social insurance funds (74.4%), the state budget (10.5%), personal payments by citizens (9.3%) and private insurance companies (4.3%). The business sector's contribution to its employees' medical care was 1.5% (Eurostat. Healthcare expenditure statistics, 2022). Health care costs are covered by two different and complementary insurance systems - basic health insurance (Zorgverzekeringswet - Zvw) and long-term (Vet langdurige zord - Wlz) medical service (Healthcare in the Netherlands, 2023). Basic insurance, in which the government defines the package of services, includes care provided by general practitioners, examinations by specialists, hospital care, medical devices, prescription drugs, nursing care and home care, paediatric dentistry and adult dentures, maternity care, and physiotherapy up to the age of 18, basic outpatient mental health care, ambulance transport, some ancillary medical services such as therapeutic exercise, speech therapy, etc. (Tikkanen, R. et al. 2020). All citizens over 18 are required to take out their own compulsory basic health insurance, which covers general medical care with an insurance company of their choice. Insurers cannot refuse to provide insurance to citizens, cannot set the amount of contributions depending on the state of health, they are obliged to provide the standard package of medical care. The amount of contributions for all categories of insured is the same. In order to attract the insured, the insurance companies add specific conditions and services such as physiotherapy, setting up their own primary care centres, reimbursement of part of the insurance contribution if the annual medical costs do not exceed a certain amount, etc. According to the Medical Insurance Act, all citizens, regardless of financial status, are compulsorily insured. The insurance of salaried workers is provided by the Central Fund of Compulsory Health Insurance with payroll deductions under a contribution-sharing arrangement of 50% contributions from employers, 45% from insured persons and 5% from the State. For children under 18, insurance is automatically covered by parents' premiums, and low-income earners receive benefits to pay for the insurance.

⁷ For more details on the issue of health financing (costs and their evolution over time, sources of financing, health coverage, functional distribution, health service providers, payment mechanisms see. Janlov, N., Blume, S., Glenngard, A., Hanspers, K., Anell, A. & Merkur, Sh. (2023), Sweden. Health system review, Health systems in Transition. Vol. 25, №4, 2023, <https://iris.who.int/bitstream/handle/10665/372708/9789289053473-eng.pdf?sequence=8>; On the issue of healthcare in Sweden and its financing, see also: Health_care_in_Sweden; Health Insurance and Healthcare in Sweden Explained (2023), internations.org/Sweden-expats/guide/healthcare; Lavgesen, K., Ludvingson, Jf., Schmidt, M., Gissler, M., Valdimarsdotir, UA., Lunde, A., Sorensen, Ht. (2021). Nordic Health Registry-Based Research: A Review of Health Care Systems and Key Register, dovepress.com/Nordic-health-registry-based-research-a-review-of-health-care-system-per-reviewed-fulltext-article-CLEP;

⁸ In the rankings from 2014-2017, the Netherlands was first, and in 2018 and 2023 in Europe it is only surpassed by Switzerland. See. Euro Health Consumer Index, encyclopedia.pub/entry/33572

Long-term care is funded under the Long-Term Care Act. Long-term care for the elderly, long-term mentally ill, permanent hospitalization, disability-related expenses, personal and nursing care, supervision, support and transportation services are funded by dedicated tax revenues established by legislation. To fund long-term care insurance, taxpayers pay 9.5% of taxable income up to a certain amount (Tikkanen, R. et al. 2020). It is no coincidence that the Netherlands ranks first among EU countries in the share of long-term healthcare expenditure with a share of 29%, compared to an EU-27 average of 16.6% (Eurostat Healthcare expenditure statistics, 2022). Statutory health coverage is supplemented by private voluntary health insurance. It provides a range of services that are not covered by the basic health insurance, such as dental care, physiotherapy, alternative medicine, etc. What is special here is that people with supplementary health insurance do not get faster access to health services, nor do they have the right to a greater choice of hospitals and specialists (Tikkanen, R. et al. 2020). Although about 84% of the population purchases voluntary health insurance, its share in the financing of health services is insignificant - 4.3% in 2020 (Eurostat Healthcare expenditure statistics, 2022). Reforms in the Dutch healthcare system and the application of market principles began in the early 1990s, but the most significant changes have been undertaken since 2006. This was first introduced by the economist Enghoven. The right to choose an insurance company creates conditions for price competition between insurers for citizens' contributions. There is also competition between medical service providers to enter into contracts with insurance companies, as the latter has the right to refuse to enter into them with certain general practitioners and hospitals. This increases the requirements on providers for the quality of medical services. The rating system for hospital facilities developed by the Government and the Consumers' Union of the Netherlands based on patient surveys is also conducive to competition. Compulsory insurance is funded by the state and managed by private insurance companies. In practice, there is a symbiosis of compulsory and voluntary health insurance, called 'compulsory voluntary health insurance', with elements of both. Elements of compulsory insurance include the lack of the possibility for insurers to refuse insurance to citizens, the impossibility of setting insurance contributions according to health status, the obligation to provide a standard package of medical care, while voluntary insurance offers specific conditions and services, such as incentives for healthy lifestyles, a discount on the insurance contribution for overweight persons under conditions of targeted weight reduction, the establishment of own primary health care centres (Foreign experience in the implementation of market models of health care, 2016). The functional breakdown of health expenditure in the Netherlands for 2020 shows that the largest share is for treatment and rehabilitation care at 49%, followed by long-term health care, medical devices, preventive care, etc. Among healthcare providers, hospital care facilities rank first with a share of 33.3%, followed by long-term care facilities with residential care at 28.7% (again the highest share among the EU-27), outpatient healthcare providers at 16.7%, medical devices at 10.2%, preventive care at 3.3% and other providers at 7.8% (Eurostat. Healthcare expenditure statistics, 2022). Contributions for health insurance are collected centrally and distributed among the insurance funds according to the number of insured and taking into account the degree of health risk related to age, gender, past use of medicines, etc. The insurance funds negotiate with the providers of health services - hospitals (mainly private non-profit organisations) and medical practitioners on the volume, prices and quality of medical services. The basic package of health services is set by legislation and prices are updated once a year. Payments for hospital services are made through a global budget and a case-based system based on the LTC, with about one-third of the tariffs set at the national level by the Netherlands Health Authority (Nederlandse Zorgautoriteit). A minor part of the costs is also covered by so-called supplements for expensive drugs and intensive care used and for university medical centres for the implementation of new technologies.

Payment to GPs is a combination of capitation for the number of patients registered, consultation fees, payment under multidisciplinary care programmes for cardiovascular risk, asthma, COPD copayments for outcomes achieved and innovation incentives (Kroneman, M., 2016, p. 99).⁹ **Spain** ranks first in the EU-27 in life expectancy at birth in 2021 at 83.3 years (compared to an EU-27 average of 80.1 years). It is also the leader, along with France, in life expectancy for those aged 65 years of 21.4 years, compared to an EU27 average of 19.2 years (Eurostat, statistics-explained, 2022).¹⁰ The country is a typical representative of the so-called "southern" version of the Beveridge model. In 2020, the country has allocated 15.0% of total public spending (WHO. Global Health Expenditure. Database, 2023) and 10.7% of GDP to health. The share of public funds is 73.2% - 69.5% of the budget and 3.7% of social security contributions. Personal payments by citizens provide 19.6% of the funds and private insurance companies 6.7% (Eurostat. Healthcare expenditure statistics, 2022). Spain's health system is decentralised. At the national level, health policy is formulated, regulations are developed, budgets are allocated to autonomous regions, the health system as a whole is coordinated and the implementation of the national health budget is monitored. Through the National Institute for Health Management, the public administration manages health care in the Autonomous Cities of Ceuta and Melilla. At the district level, through the health departments, as the health authority, the order of medical care is defined and controlled, public health resources are planned, regulated and managed, and medical services are purchased from providers (Delgado, E. et al., 2018). It is therefore possible that the type of medical services provided, the cost of public health care and access to medical care vary by region. The country's health system includes three statutory insurance subsystems: the universal national health system (Systema Nacional de Salud, SNS); mutual funds serving government employees, the armed forces, and the judiciary, and the designated "Mutual Aid with Social Security" accident and occupational disease assistance. Civil servants also have the choice of having their health needs met outside the universal national system, with SNS paying a capitation fee to cover the costs incurred (Spain: health system overview, 2023). Budgetary resources as the main source of financing for the universal national health system are raised from central (income, value added tax) and local taxes, with high excise duties on alcoholic beverages and tobacco products introduced specifically to finance health care. Although with a modest share in total current expenditure, part of the funds are raised from contributions to compulsory social security, which covers 91% of the country's population. The social security fund is raised through monthly deductions from wages of salaried workers, contributions from employers subject to the principle of social justice in health care, from workers in cooperatives and the self-employed. In addition to the payment of compulsory social contributions, registration with the National Institute of Social Security is required for the use of public health services (Instituto Nacional de la Seguridad Social - INSS) and possession of a public health card (tageta sanitaria individual). The compulsory insurance package includes a wide range of health services such as emergency care, outpatient and inpatient treatment, diagnostics, laboratory tests, rehabilitation, preventive care, family medicine, and paediatric care. Dependents benefit from the insurance of working and insured family members.

⁹ For details on health financing in the Netherlands, see. Kroneman, M., Michael van der Berg, W., Judith de Jong, P., Ginneken, E. (2016) Netherlands. Health system review. Health System in Transition (2016), vol. 18, №2, p. 57-105, and for payment mechanisms, p. 95-105, <https://iris.who.int/bitstream/handle/10665/330244/HiT-18-2-2016.eng.pdf?sequence=5>;

¹⁰ For these achievements, in addition to quality health care, the contribution of a favourable climate and a healthy diet with seafood and fresh fruit and vegetables must also be taken into account. According to E. Tenda (2022), in 2020 Spaniards consumed 63.9 kg of fresh vegetables per capita. See. Tenda, E., Per capita consumption on fresh vegetables Spain 2011-2020, [statista.com/statistics/772001/consumption-by-person-from-vegetables-y-vegetables-fresh-in-spain/](https://www.statista.com/statistics/772001/consumption-by-person-from-vegetables-y-vegetables-fresh-in-spain/).

The elderly, children, the unemployed, and the disabled with more than 65% disability benefit from free health care services without paying social security contributions. 99.5% of the population receives state medical care with free basic services from the universal national health care system. In Spain, supplementary private health insurance ranks third as a source of healthcare funding. About 25% of the population uses some form of private insurance (Van der Most, 2023). As in other EU member states, voluntary supplementary insurance provides additional coverage for certain services, speeds up the receipt of medical services, provides access to specialists without referral, and provides a choice of doctor and medical facility. The insurance packages offered by private insurance are different: for visiting a doctor (*asistencia sanitaria*), for coverage of all medical centres (*reembolso de gastos medicos*), capitated (*per capita*), basic (*seguro basico*), mixed (*seguro mixto*), extended (*seguro extendido*). The prices of the packages depend on the types of medical services included, age, health condition, and duration of insurance. Medical service providers are hospitals (*hospitales*) and medical centres (*centros de salud*).¹¹ Medical centres have a team of specialists such as family doctors, nurses, paediatricians, midwives, and physiotherapists. They provide basic primary care services. Secondary specialised care with more complex diagnostic and therapeutic tools is provided in hospital medical facilities. Ownership of medical centres and hospitals is both state and private. A peculiarity is that both public and private medical facilities can provide both public and private medical services. Hospitals are the main provider of medical services, accounting for 46.4% of current healthcare spending in 2020, followed by medical device providers at 21.1% and ambulatory care providers at 19.9% (Eurostat. Healthcare expenditure statistics, 2022). In 2021, approximately 92.1% of current public health expenditures were disbursed through the autonomous regional governments (Mendoza, J., 2023). District health administrations contract with private medical centres and hospitals and with the National Health System for the delivery of medical services. Functional patterns of health expenditure show that the largest amount of funds is spent on curative and rehabilitative care (58.6%), followed by those on medical devices and long-term care (Eurostat. Healthcare expenditure statistics, 2022). The payment mechanisms vary from one healthcare facility to another and from one specialist to another. For acute care hospitals, a global budget plus case-based payment by the diagnosis-related group is used; for hospital outpatient visits and public health non-acute care hospitals, through a global budget; for primary care, a combination of a global budget, capitation and pay-for-performance according to what was done; private non-acute care hospitals, pay-per-day; and for emergency care, bundled payment. Physicians are paid a combination of salary plus fee-for-service and pay-for-performance, and in private facilities according to the volume of service provided. Nurses receive a salary (Bernal-Delgado, E. et al, 2018, p. 69 -77). Challenges to the health system include waiting times for surgeries, diagnostic procedures and specialist visits, certain behavioural risk factors such as obesity among children and adults, and improving coordination between regions (Spain: health system overview, 2023)¹².

3. NEWLY ACCEDED POST-SOCIALIST COUNTRIES

Czech Republic - The Czech Republic also practices a health insurance system. In 2020, the country has allocated 9.2% of GDP to health care. Per capita current spending amounts to €1,859, which ranks the country second after Slovenia among the former socialist countries that joined the EU, and in purchasing power parity at €2,649. In just five years, for the period 2015-

¹¹ By 2020, the country has about 800 medical centres and 771 hospitals, of which 432 are private (308 profit-oriented and 124 non-profit). Cited by: Yong, Y. (2023).

¹² For more details on health financing in Spain, see. Bernal-Delgado, E., Garcia-Armesto, S., Oliva, J., Martinez, F., Repullo, J., Pena-Longobardo, L., Ridao-Lopez, M. & Hernandez-Quevedo, Cr., (2018), Spain. Health system review, *Health Systems in Transition*, Vol.20, № 2, 2018, p. 43-77, and on payment mechanisms p. 69-77, https://iris.who.int/bitstream/handle/10665/330195/HiT-20-2-2018_eng.pdf?sequence=11.

2020, current per capita spending on healthcare increased by as much as 63%. The health system is mainly financed by health insurance contributions to public insurance companies - 70.2% and the state budget - 17.5%. The share of financing from private funds (personal payments of citizens, voluntary insurance in private companies, funds of non-profit organizations and the business sector for health care of its employees) is 12.3%. Of these, the more significant share of personal funds from citizens is 11.5% of total current expenditure (Eurostat. Healthcare expenditure statistics, 2022). Healthcare also accounted for 17.1% of total public expenditure in 2020 (WHO. Global Health Expenditure. Database, 2023). Health insurance is compulsory and voluntary, with the share of voluntary supplementary insurance being negligible - with a 0.1% (the lowest in the EU-27) share in total current health spending in 2020. Compulsory health insurance is universal and compulsory for everyone employed and resident in the country. Coverage is provided by seven public health insurance funds such as VZP, OZP, VOZP, CPZP, etc. The funds are mainly financed by insurance contributions (67%) and budgetary transfers - 31% (Bryndova, L., et al, 2023). Employees' social security contributions amount to 13.5% of gross salary. Two-thirds (9%) of the contributions are paid by employers and one-third (4.5%) by employees. The self-employed pay 13.5 per cent of their 50 per cent earnings at a minimum defined monthly contribution, and non-taxable earners pay their monthly contributions (Cancelar zdravotniho pojisteni, 2024). There is no cap on the level of taxable income. Mandatory health coverage covers inpatient and outpatient treatment, diagnostics, preventive care, certain dental procedures, prescription drugs, patient transportation, physician-prescribed rehabilitation, spa treatments and over-the-counter medications, and more. Guided by the maxim that the first duty of health care is the protection of health and the second is the treatment of disease, in the Czech Republic, comprehensive (komplexni zdravotni pojisteni) health insurance includes free annual preventive examinations by a doctor, electrocardiograms every four years, and mammograms every two years for women aged 45 to 69. Individual rather than family insurance is preferred and actively used in the Czech Republic. Compulsory health insurance in the Czech Republic is also based on so-called regulated competition, with health funds competing for insured persons through additional services to the standard benefits package (<https://www.medicinform.net>, n.d). The state pays contributions for certain groups of economically inactive people - unemployed, women on maternity leave, children, pensioners, disabled, students, etc. Insurance is also provided by private health insurance funds. Competing funds do the fundraising and purchase the medical services from the providers. In order to reduce the health risk, the general health insurance fund redistributes about 60% of the funds based on the size of the population by region, taking into account the share of the elderly population over 65. The main part of current healthcare expenditures in 2020 was for hospital care (29.9%), rehabilitation services (23.2%), medical devices (17.3%), long-term health care - (17.1%) and 6.7% for ancillary services such as laboratory tests, patient transport, etc. (Bryndova, L., et al, 2023). The main provider of healthcare services is hospital medical facilities, followed by outpatient care providers, medical device providers and long-term healthcare providers. (Eurostat. Healthcare expenditure statistics, 2022). Hospitals are public (state, regional, local) and private. Patients have the right to choose their health insurance company and hospital if the same has a contract with their insurance fund. Hospital services are paid on a contractual basis between the insurance funds and the individual hospitals. The payment mechanism for hospital care is different. In outpatient care hospitals through fee-for-service based on limited historical volumes, in acute care hospitals pay per case based on LTCG (44%) plus prospective budget with LTCG measured target volumes (56%), in long-term care hospitals through daily payment. General practitioners are paid through capitation (63%) and fee-for-service (37%) with an established ceiling, dentists are paid through fee-for-service (Bryndova, L., et al, 2023, p. 75).

Additional user fees are charged for primary care out-of-hours and outpatient specialist visits (Bryndova, L., et al, 2023, p. 70, 75)¹³. Typical of former socialist countries, **Romania's** health system is also being transformed from the state-funded Semashko model into a social health insurance (SHI) system. The Health Insurance Law, adopted in 1997 and enacted in 1999, established health insurance funds in Romania and introduced financing through health insurance contributions. The National Health Insurance House (NHIH) was established to manage the health insurance system. At the local level, district public health organisations and district health insurance houses operate under the NHIH and the Ministry of Health and are responsible for the provision of health services by the legal framework. (Petre, I., Barna, F., Gurgus, D., et al., 2023). Romania ranks second to last, after Luxembourg¹⁴, among the EU-27 countries in the relative share of health spending as a percentage of GDP in 2020 at 6.3%. It also has the lowest per capita health spending at €713 in 2020, although it has increased by almost three quarters - 73.3% - between 2015 and 2020 (Eurostat. Healthcare expenditure statistics, 2022). The main part of the funds is financed by social security contributions - 62.7% in 2020, followed by personal means paid by citizens - 19.0%. Symbolic is the share of private insurance companies - only 0.5%, and the state through the budget provides 17.5% of the funds, paying insurance for certain categories of citizens, for capital investments, etc. (Eurostat. Healthcare expenditure statistics, 2022). The share of healthcare expenditure in total public expenditure in 2020 was 12.0% (WHO. Global Health Expenditure. Database, 2023). Social health insurance is compulsory for all citizens and covers about 85% of the population. 12% of citizens do not have health insurance - seasonal agricultural workers, informal sector workers, low-income earners who do not have the financial capacity to pay social health insurance contributions, etc. Children and young people up to the age of 18, students up to the age of 26 without income, persons with disabilities under certain conditions, persons with illnesses included in national health programmes, pregnant women and young mothers without income are exempt from contributions but have the right to be insured (Health care in Rumania, n.d.). The package of health services includes a wide range of health services, excluding medical services for occupational diseases, work and sports accidents, cosmetic adjustments, in vitro fertilization, the cost of materials for hearing and vision corrections, certain rehabilitation, high-quality medical and dental services, hotel services with a high degree of comfort (Petre, I., Barna, F., Gurgus, D. et al., 2023). The financial resources of the social health insurance system are raised by monthly deductions from employees' salaries of 5.5%, with employers paying a further 5.2%. There is no upper limit on the amount of income on which contributions are levied. The self-employed also pay contributions of 10.7% of income above a statutory ceiling (Vladimirova, O., (2017). There are regional and a single national health insurance fund. The national fund accumulates and distributes to the regions and funds the funds raised, taking into account population size and health risk.

¹³ For a more detailed discussion of healthcare financing and spending in the Czech Republic, see Bryndova, L., Hrobon, P., Slegerova, L., Chufman, N., Vodapkova, J., Spranger, A., Czechia. (2023). Health system review: Health System in Transition, Vol. 25, №1, 2023, p. 47-80, https://iris.who.int/bitstream/handle/10665/366520/9789289059336_eng.pdf?sequence=1; McVay, D., (посл. обн. 2023) Czechia: Health System Financing, <https://healtheconomicsfacts.org/?url=https%3A%2F%2Fhealtheconomicsfacts.org%2F%2Fczech-republic%2Fczech-republic-health-system-financing%2F>, Czechia: Health System Overview (2023), <https://healtheconomicsfacts.org/czech-republic-health-system-overview>; Alda, M., (2020) Health care in Czechia. <https://www.statista.com/study/132973/health-care-in-czechia>: Health care in Czechia – statistics & facts. <https://www.statista.com/topics/10730/health-care-in-czechia/#topic>.

¹⁴ The paradox that Luxembourg has a lower relative share of health expenditure to GDP and at the same time is the EU leader in health expenditure per capita is explained by the fact that a large proportion of those working in Luxembourg are foreign nationals who contribute to GDP, but their health expenditure is not accounted for in Luxembourg's health accounts (Eurostat. Healthcare expenditure statistics, 2022).

Medical care is provided by hospitals, as well as medical, diagnostic and health centres, the latter providing only day services, without inpatient care. Hospitals are state and privately owned. Despite the significant increase in private hospitals since 2007, their share is currently 23.9% of the total. The distribution of medical facilities by region is extremely unequal, resulting in unequal access to healthcare for the country's citizens¹⁵. Hospitals are also the main provider of medical services with a share of 48.0%, followed by providers of medical devices - 25.2%, outpatient services -13.6% and 13.2% of other providers. Inpatient and rehabilitation services accounted for the bulk of healthcare spending in 2020, at 57.0%, followed by medical devices at 25.9%. The country lags significantly behind the EU-27 average in terms of the share of long-term healthcare expenditure - 16.6% and 5.4% respectively. The country has a National Health Insurance Fund, 42 regional funds and 2 national occupational funds for employees of the Ministries of Justice and Transport and Communications. The funds collected by the insurance companies are paid into the central National Health Insurance Fund and distributed to the regions and occupational funds, taking into account the size of the population and the health risk. Ownership of the hospitals is public and private. Payment for hospital services is based on an annual framework contract between the National Health Insurance Fund, and the doctors' union, signed by the Ministry of Health and approved by the Government. The framework contract defines the packages of medical services (updated periodically by the Ministry of Health), the conditions for the provision of services, and the payment mechanisms. Payment for care in acute care hospitals is per case on a LTC basis, fee-for-service for outpatient care, per case and fee-for-service for day care. Costs in long-term care facilities are covered on a per diem basis. Primary care family physicians are paid on a per-case capitation and fee-for-service basis and dentists are paid on a fee-for-service basis (Vladescu, Cr., Scintee, S., Olsavszky, V., Hernandez-Quevedo, Cr., Sagan, A., 2016). The challenges facing the Romanian health care system are related to the unequal access to health care between urban and rural areas, the large number of uninsured people, the insufficient funds for health care as a percentage of GDP and per capita, and the informal payments to health care workers. This type of payment, together with formal payments with personal funds, provokes the emergence of so-called catastrophic medical costs that prevent households from meeting their basic needs (Out-of-pocket payments for health care in Rumania undermine progress towards universal health coverage, 2022). Latvia is an example of a post-socialist country that has retained the budget form (the Beveridge model) of health financing. The few attempts to transition to a social insurance model have not yielded a positive result and there is now a general tax-based state provision of health care. Through the payment of taxes, virtually all taxpayers are considered to participate in health financing. In 2020, the country has earmarked 7.5% of GDP and 10.9% of total public spending for health. Per capita spending on health in 2020 was €1,154 and €1,551 at purchasing power parity. Despite a 58% increase in health spending per capita between 2015 and 2020, the country lags behind the EU27 average by 2.8 times, as well as the other Baltic post-socialist countries Lithuania and Estonia (Eurostat. Healthcare expenditure statistics, 2022, WHO. Global Health Expenditure. Database, 2023). The main source of funding for health care is the state budget, which in 2020 provided 63.6% of health care funding. A percentage of personal income tax is allocated to health, supplemented by general taxation. The share of personal payments of citizens is extremely high - 31.9% in 2020. The share of private insurance companies in 2020 is 4.3% (Eurostat. Healthcare expenditure statistics, 2022). The state, in turn, provides for children and young people up to 18 years, The insurance package includes emergency medical care, inpatient and outpatient treatment, rehabilitation, psychotherapeutic and psychological care, laboratory and diagnostic tests, care for pregnant

¹⁵ Urban areas concentrate 90.9% of the total number of hospitals and inpatient facilities, 92.3% of the number of specialized outpatient clinics, 97.3% of dispensaries, 97.8% of dialysis centres, and 98.5% of specialized medical centres. (qtd. in: I. Petre, F. Barna, D.Gurgus et.al., 2023).

women, chronic haemodialysis procedures, etc. The funds collected from tax revenues go to the National Medical Insurance Fund, which distributes it to the regions taking into account the number and age composition of the population. There are several levels of medical care in the country - emergency, which is provided to any person in situations dangerous to the health or life of the victim; primary - provided by family doctors or their teams, paediatricians, midwives, and dentists. It can be obtained not only from GPs but also from any doctor who provides similar services. Secondary care is provided by specialist doctors, in outpatient or hospital settings. Highly specialised medical services for the treatment of patients with rare and dangerous diseases or diseases requiring unique and expensive technologies are provided in specialised medical facilities by specialists with one or more specialities. The provision of medical services in these facilities is paid for directly by the National Health Insurance Fund. Patient fees are payable for visits to family doctors, specialists in day hospitals, and inpatient medical rehabilitation. Regional funds enter into contracts with hospitals for the medical services provided and pay the costs. In the absence of a contract, patients pay for the treatment themselves. The payment mechanism varies by region - by volume of services provided, by number of patients, based on a global budget. The main provider of medical services is the hospital medical institutions - 34.6%, the number of which to optimize costs has been strongly reduced since the beginning of the new century¹⁶. The share of suppliers of medical devices - 25.2% and outpatient services - 25% is almost equal, while the share of suppliers of ancillary services is 9.2%. The bulk of the expenditure was on curative and rehabilitative services - 51.5%, on medical devices - 26.2%. Ancillary services accounted for 12.5% of expenditure, while the share of long-term costs was 5.1%, compared to an EU-27 average of 16.6% (Eurostat. Healthcare expenditure statistics, 2022)¹⁷. GPs receive a combined payment of capitation for the number of registrants, fee-for-service and additional payments for quality outcomes achieved. There is also a combined payment for hospital medical services - a fixed budget (for emergency and observation wards), payments per case on a DSG basis, and payment per bed (The Public Health System in Latvia, 2021). Challenges across the health system are related to the uneven distribution of doctors between urban and rural areas, the age composition of general practitioners, the extremely long timeframes for accessing innovative health services such as MRI, Doppler scans, ultrasound, the migration of medical staff, the large amount of out-of-pocket payments by patients (<https://chayka.lv/2023/09/06/41-mln-euro-medicine>, The Public Health System in Latvia, 2021). Croatia. The Croatian healthcare system is also based on social health insurance (SHI). The share of current health expenditure as a percentage of GDP in 2020 was 7.8% and in total public expenditure 12.0%. Health expenditure at current prices per capita was € 963 and at purchasing power parity € 1448. The growth in current expenditure on health for the period 2015-2020 was 28.7%.

¹⁶ In 2000 their number was 142, while in 2020 there are only 60. See Michas, F., Number of hospitals in Latvia 2000 to 2020. <https://www.statista.com/statistics/561380/hospitals-in-latvia/>

¹⁷ See more about health financing and spending in Latvia: Behmane, D., A. Dudele, A. Villerusa, J. Misins, K. Klavina, D. Mozgis, G. Scarpetti (2019). European Observatory on Health Systems and Policies. Health Systems in Transition, Vol.21, № 4, 2019, <https://iris.who.int/bitstream/handle/10665/331419/HiT-21-4-2019-eng.pdf?sequence=1>, p.43-72; Kaminska, M., E. Druga, L. Stupele, A. Malinar, Changing the healthcare financing paradigm: Domestic actors and international organizations agenda setting for diffusion of social health insurance in post-communist Central and Eastern Europe. Voley Online Library, <https://onlinelibrary.voley.con/doy/full/10.1111/spol.12724>; M. Peterson, K. Ketners, I. Erins (2020). Health financing policy reform trends: the case of Latvia, Journal of interdisciplinary research, Vol. 9, № 2, pp. 265-271; https://www.researchgate.net/publication/338502054-HEALTH_FINANSING_POLICY_REFORM_TRENDS_THE_CASE_OF_LATVIA; В. Меньшиков, О. Волкова, (2018). Экономическая доступность здравоохранения Латвии: опыт сравнительного анализа, Вестник Витебского государственного технического университета, № 2, (35), с. 135-142. <https://cyberleninka.ru/article/n/ekonomicheskaya-dostupnost-zdraveoohraneniya-latvii-opyt-sravnitelnogo-analiza/viewer>

The main source of funds was compulsory social insurance, which provided 75.5% of current expenditure, while the state budget financed 8.7% of expenditure, with public funding reaching a share of 84.2%. The share of citizens' health payments was 8.9% and of voluntary health insurance was 5.3%. (Eurostat. Healthcare expenditure statistics, 2022). In 2020, health was allocated 12.0% of total public spending (WHO. Global Health Expenditure. Database, 2023). Medical insurance in the country is compulsory (обvezно) and voluntary (dopunsko). In the system of compulsory health insurance, the only insurer is the Croatian Health Insurance Fund (Hrvatski zador za zdravstveno osiguranje - HZZO). The Fund determines the volume and standards of health services, and negotiates the number of insurance contributions jointly with the Ministry of Health and the Ministry of Finance (Croatia–EU–healthcare.fi). Compulsory insurance covers the economically active population with contributions to the HZZO of a certain percentage of pre-tax wages and employers. Contributions are also paid by the self-employed, farmers, pensioners with a certain percentage of pension income above the average wage. For the registered unemployed and pensioners with income below the average wage, the disabled, etc., contributions to the compulsory insurance are paid by the state budget. Dependents such as children and young people up to 18 years, students and unemployed up to 26 years are covered by the parent's health insurance. The package of health services under compulsory insurance includes primary health care, inpatient and outpatient treatment, counselling, occupational diseases, occupational injuries, and medicines included in the official list of HZZO medicines. HZZO is also the main insurer for supplementary health insurance, which can be carried out in other insurance companies besides HZZO. It covers more than one third of the population. About three-fifths of its contributions are subsidised by the state budget, through which the contributions of the disabled, the elderly infirm, organ and blood donors, low-income earners, and students aged 18 to 26 are fully paid. Medical services are provided by public and private providers, such as primary care hospitals (clinical, general and special), health centres, and private medical practices. Primary care facilities are mostly private, some of them are also owned by local municipal authorities, while high-tech specialized facilities are state-owned (Florova, E., 2021). Hospitals are the main provider of medical services, accounting for 46.8% of current expenditure in 2020, followed by medical devices at 22.7% and ambulatory care at 19%. The bulk of current spending was for inpatient and rehabilitative care at 56.3%, medical devices at 23.2%, and ancillary services at 11.1%. The share of expenditure on long-term health care was extremely low at 3%, compared to an EU-27 average of 16.6%. (Eurostat. Healthcare expenditure statistics, 2022). The financing of healthcare in Slovenia is also organised based on the social security model. According to the indicator life expectancy at birth for 2021 of 80.7 years. Slovenia outperformed the EU-27 average of 80.1 years. On this indicator, it also outperforms all post-socialist EU member states at present. For the first time in 2021. Slovenia has also overtaken the EU Member States in average life expectancy for citizens aged 65 and over, at 19.3 years compared to the EU27 average of 19.2 years (ec.europa.eu/Eurostat/2023). All of these successes have been achieved based on 2.8 times fewer personal healthcare payments by citizens in Slovenia compared to Bulgaria. In 2020, the country has allocated 9.5% of GDP to health. In the same year, current spending on health reached EUR 4 435 million. On a per capita basis, this amounted to €2,110 and at purchasing power parity to €2,419. The increase in current expenditure has been sustained, with growth of almost a quarter - 24.7% - for the period 2015-2020, by which indicator the country is ahead of the EU-27. The main part of health care funds is provided by compulsory social insurance - 64.1%, followed by voluntary insurance schemes with 13.4% and personal payments by citizens of 12.5%. The share of budgetary funds was 9.1%, with part of the health care funds, at the regional level, around 3%, being provided by revenues from local budgets. (Eurostat. Healthcare expenditure statistics, 2022). The share of current health spending in total public spending in 2020 was 13.4% (WHO. Global Health Expenditure. Database, 2023).

There are three levels of healthcare in Slovenia. The first level includes primary health care centres and pharmacies. It covers emergency care, general/family medicine, care for children, women and adolescents, laboratory and diagnostic facilities, physiotherapy, and preventive care. The second tier includes specialised outpatient care and hospital medical facilities. Tertiary care is provided by the University Institutes (Oncology and Rehabilitation, Oncology), University Clinics and Medical Centres, Ljubljana Psychiatric Clinic (Organization of healthcare in Slovenia, 2023). Compulsory health insurance as the main source of funds is provided solely by the Institute for Health Insurance of Slovenia (Zavod za zdravstveno zavarovanje Slovenije - ZZZS). It is compulsory for all permanent residents in the country, with the share of uninsured persons at the end of 2021 being only 0.15% (Albreht, T., Kuhan, M. & Rupel, V., 2022). Contributions for compulsory insurance are levied on the gross income of employees at a rate of 13.45%. Employees pay 6.36% of their gross income and employers pay 6.56% for illnesses and accidents outside work and 0.53% for occupational accidents and diseases. Employees' family members' contributions also cover that of dependants. Self-employed persons pay a contribution based on the gross pensionable earnings not less than 60% of the average annual wage. Contributions for the unemployed are covered by the National Employment Institute and for pensioners by the Pension and Disability Insurance Institute (Albreht, T., Kuhan, M. & Rupel, V., 2022). Compulsory health insurance covers a wide range of health services such as outpatient and inpatient treatment, outpatient services, dental services for persons under 19, preventive and rehabilitative services, emergency medicine, payment of temporary disability and childbirth benefits, diagnosis of diseases and laboratory tests, prescription drugs such as medicines for children and for the treatment of certain diseases such as diabetes, cancer, sclerosis and others are free. Around 95% of Slovenia's population also benefits from voluntary supplementary health insurance, which provides faster access to medical services, greater patient choice and higher quality services. Supplementary health insurance covers the difference between the cost of the health service and the part of the cost guaranteed by compulsory health insurance. In this way, it effectively acts as „coinsurance, covering a share of each health service in the basic benefit package“ (Rupel, V., & Marusic, D. 2021). Coinsurance co-payment prices vary according to the importance of the health service, being low for the most important and increasing for unimportant services. Insurance fees for supplemental coverage are paid to one of three private insurance companies – Vzajemna, Generali and Triglav zdravje. The total healthcare budget and the allocation of funds are negotiated between the HIIS, the Ministry of Health and the medical providers. The funds from compulsory insurance are collected in a National Health Insurance Fund. By function, the bulk of health expenditure was allocated to curative and rehabilitative services with a share of 57.4%, followed by those on medical devices with 21.1%. Hospitals were the main provider of health care with a share of 39.1%. They were followed by ambulatory care and medical device providers with 23.6% and 20.8% (Eurostat. Healthcare expenditure statistics, 2022). Most hospitals are state-owned and primary care centres are municipally owned. The total healthcare budget and the allocation of funds are negotiated between the HIIS, the Ministry of Health and the medical providers. The funds from the compulsory insurance are collected in a dedicated National Health Insurance Fund. As the main purchaser of health services, HIIS enters into contracts with providers specifying the types of services, volumes, prices, and payment methods. Private hospitals receive concessions from the Ministry of Health and enter into contracts with HIIS. The payment mechanisms for health services vary for different levels of health care. Private insurance companies pay the costs of health service providers, and patients pay out of pocket for a portion of the health services received. In percentage terms, however, they are lower than personal payments in the EU-27 and 2.8 times lower than in our country. Primary health care uses a combination of capitation or receiving a fixed amount for each enrolled or served resident of the region and fee-for-service.

Outpatient care is paid through fee-for-service, and in hospitals, payment per bed is replaced by payment by diagnostic-related groups (DRGs). Combining payment on a per-DSG basis with „using still and historical volumes frustrates the imposed constraints of budget limits set by DSM“ (Albreht, T., Kuhan, M. & Rupel, V., 2022)¹⁸.

4. CONCLUSION

Having presented the analytical overview of the financing mechanisms of our selected EU member states, which in our opinion are representative of all the models in operation, within the framework of this conclusion we will approach in a more non-standard way. It concludes in a conditional comparison of the parameters and mechanisms of the financing models in Bulgaria and the countries mentioned in the study. In this way, we simultaneously summarize the results of the research, fix the place of the Bulgarian model in the European health space and mark possible guidelines and good practices, from the introduction and implementation of which we can only draw positives. In this line of thought, we reached the following conclusions:

- The financing of health care, including in Bulgaria, is carried out from three main sources - social insurance funds, budget funds (state and local) and personal payments of citizens. Voluntary insurance in insurance companies has a complementary and peripheral, still insignificant character. The financing of Bulgarian healthcare is also based on the health insurance model, with a share in current costs for 2020 of 45.6%, followed by citizens' funds of 35.5%, and 17.5% of costs are financed from the budget (Eurostat. Healthcare expenditure statistics, 2022).
- Almost all former socialist countries made a transition from budgetary to social security financing. Since this type of financing is based on employment, due to migration processes, a significant grey sector in the economy, etc., problems arose in post-socialist countries with the lack of funds and the quality of health services. Evidence of this is the ranking of the countries according to the Health Consumer Index¹⁹ for 2023, where the post-socialist EU member states occupy seven of the last ten places - Croatia, Lithuania, Latvia, Bulgaria, Poland, Hungary and Romania (Country ranking euro- health-consumer index, 2023). In the ranking according to the health index for 2023, the last eight places among the EU-27 countries are post-socialist countries - Slovakia, Hungary, Poland, Croatia, Latvia, Lithuania, Bulgaria and Romania (Health index of Countries in Europe, 2023²⁰, <https://www.statista.com/statistics/1376355/health-index-of-countries-in-europe/>).
- Denmark, Luxembourg and Ireland and Germany, the Netherlands and Sweden, included in the study, spent more than five thousand euros in current healthcare costs for 2020. Below one thousand euros are only post-socialist countries - Poland, Croatia, Bulgaria and Romania, and the last two countries are leaders in this negative ranking as well.
- Bulgaria is a leader in the EU in another negative ranking. Citizens of the poorest country in the EU in terms of GDP per capita, average hourly wages and net minimum income (after personal income tax and social security contributions) paid the largest share of costs out of personal funds for healthcare in the EU from 35.5%. This share is 2.5 times larger than the EU-27 average of 14.4% and 2.4 times more than the 15% recommended by the WHO to prevent citizens from falling into a catastrophic situation and reliable financial protection.

¹⁸ On the health system and its financing in Slovenia, see details: Albreht, T., Kuhan, M. & Rupel, V., 2022). Structure, Processes and Results in Healthcare System in Slovenia, <https://www.intechopen.com/shapters/77267>;

¹⁹ The Health Consumer Index is compiled based on publicly available public data, patient interviews and independent surveys. It evaluates the quality of healthcare according to 42 indicators, including patient rights, access to treatment and its results, access to medicines, disease prevention, etc.

²⁰ The health index assesses population health and access to services needed to maintain good health such as health outcomes, health systems, diseases, risk factors and mortality rates.

- In each of the targeted countries and the EU, except for Germany, the main provider of health services was hospital treatment facilities. In all countries, the payment measure adopted to finance hospitals is combined and includes several payment methods. In Bulgaria, since 2001, payment per case on clinical pathways has been used as a payment measure. This funding model is not used in any country not only in the EU but also in the world. Clinical pathways represent a guideline for the consistent implementation of hospital care for patients with a particular disease. Due to a number of their shortcomings, their use as a funding model has proven to be unsuitable and ineffective and their replacement by payment per case under the SDR, whenever it is implemented, will be overdue.
- The extremely small share of ambulatory care costs in current health care costs. In the EU-27, this share amounts to 24.8%, and in our country, they are only half - 55% of the average for the EU. Here again, with the lowest share of ambulatory care, we are leaders with Romania. In countries with developed healthcare systems such as Germany and Finland, this share is over 30%, in Belgium – 29.1%, in Luxembourg – 28.9%. At the same time, Bulgaria is the leader in terms of the supply of medical devices in the total current expenditure with a share of 33.6%, followed by Greece and Slovakia with an average share for the EU-27 of 16.7% (Eurostat. Healthcare expenditure statistics, 2022).
- For objective reasons such as the introduction of new, more expensive equipment, new technologies and medicines, the desire to improve the health status of citizens, increase the quality of health services, etc., healthcare costs are increasing worldwide, including in Bulgaria. In our country, healthcare costs for the period 2013-2020 have increased by 74%. Even without a correlation analysis to measure the strength of the relationship between the individual factors and the resulting phenomenon, it is evident that due to their low efficiency, these costs do not correspond to the results obtained, and even regress on many indicators. Life expectancy at birth for men fell from 71.3 to 70 years between 2013 and 2020 and for women from 78.6 to 77.5 years. Healthy life years for the 65-year-old population decreased over the same period from 9.4 to 9.3. The total mortality rate per 1,000 population was 14.4‰ in 2013, 17.9‰ in 2020, and 21.5‰ in 2021 due to the Covid-19 pandemic. We have an indisputable success in terms of the infant mortality rate (the number of deaths of children under 1 year per thousand live births) from 7.3‰ in 2013 to 5.1‰ in 2020. However, still with an infant mortality rate of 5, 6‰ in 2021, we occupy the first place in the EU, followed by Romania. We are also first in terms of the total mortality rate, followed by Latvia and Romania. We are second to last, before Romania, in the ranking according to the health index for 2023 (Health index of countries in Europe, 2023). We are at the bottom of the ranking according to the Health Consumer Index for 2023, on which we are ahead of only Poland, Hungary and Romania. (Country ranking euro-health-consumer index, 2023).

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CULTURAL CORRIDORS AND LITERARY TOURISM

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ABSTRACT

Since the mid-1980s, a new phase of tourism has emerged that emphasises the cultural component as part of the tourist experience. This focus has led to realigning the nature of tourism and its impacts. Literature, as part of the culture of different regions, is the bearer of the opportunity for tourism to become a sustainable factor for both attracting tourist flow to a certain region and for exporting culture and scientific knowledge beyond the borders of that region. This report presents literature as an opportunity to enrich and expand the palette of cultural tourist destinations, as well as the opportunity for literary tourism to support the development of regions.

Keywords: *cultural corridors, literary routes, cultural tourism, development of regions*

1. INTRODUCTION

For millennia, civilizations have emerged, developed, flourished, and eventually declined. As a result of these cycles, they have left a legacy that bears an indelible imprint on the history of the world. This heritage represents pivotal moments in human development, whether measured by the extraordinary size of preserved monuments or the uniqueness of paintings and music. Cultural heritage tells the story of humanity, and tourism, in turn, breathes life into this heritage. At the dawn of the current millennium, the Council of Europe predicted that cultural heritage would play an increasingly significant role in the information society of the 21st century. The development of technology and the possibility of free movement of people and capital present an opportunity to capitalize on the cultural assets of each region. In his report, Prof. Todor Krastev concludes that "In the age of globalization and unprecedented mobility, it is precisely this, under equal economic conditions, that will determine the choice of a person's environment for living and personal development." Environments with memory will increasingly attract people, activities, and investments (Krastev, 2009). Tourism, like many other activities in the social world, has undergone a dramatic transformation in recent years. Until recently, research on tourism as an economic activity focused on analysing the movement of people to places. This movement is conceptualized in terms of individual motivations such as the desire to escape reality, seek adventure, and pursue authenticity. In this context, tourism is seen in terms of people traveling to places as cultural objects in a mapped space (Lury, 1997). Understanding these cultural sites is like arranging the space according to the interests of the visitors; as sites that have to be travelled to, sites that you simply have to go to and then return to, taking away something that in turn symbolizes those places and cultures. It can be a photo, a postcard, a souvenir, a memory, or an experience. Regardless of whether we consider tourism as an object or as the subject of someone's visit, it is invariably related to the spirit and culture of the place in geographical, historical, social, and cultural aspects. When we think of tourism as an opportunity for the development of a given region, it must be developed and presented in the context of what both distinguishes it and connects it to the rest of the world. Among these opportunities, the preservation of cultural and historical heritage and the modern aspects of its presentation and development are leading.

2. "CULTURAL CORRIDOR", "CULTURAL ROUTE" AND "CULTURAL TOURISM"

The concept of the "cultural corridor" has many different dimensions. It is polythematic and loaded with various functions. The very concept was first introduced in 1974 by the Romanian Scientist Acad. Razvan Teodorescu. It characterizes a specific phenomenon of South-Eastern Europe, namely, the traditional territorial directions in the region. Along these corridors, cultural values, ideas, and innovations circulate through ongoing connections, influences, and interactions. As a result of these layered interconnections, over the years, territorial axes of centuries-old relations have formed in the region (Krastev, 2009). The concept arose on the occasion of South-Eastern Europe, which is "a real crossroads of civilizations, religions, relations, and interconnections over the centuries"; Southeast Europe, which is "a mediator between East and West, between North and South; it is a territory woven by internal interactions and connected by common historical roots" (Krastev, 2009). As a result of all these layered interconnections, over the years, territorial axes of centuries-old relations have been formed in the region, which in their essence are, on the one hand, the living memory of the civilizations residing here, and on the other, a strong connection between the peoples who inhabit it. These axes serve as living memories of the civilizations residing here and establish strong connections between the peoples who inhabit them. The polythematic character of cultural corridors as a concept is rooted in this variety of historical overlays and interconnections intertwined over the centuries. Cultural tourism is the pragmatic realization of the memory stored in cultural corridors, from which many new ideas can be born. With a nod to us, Prof. Todor Krastev calls cultural tourism "the child of a marriage of convenience, between Culture and Tourism." (Krastev, 2009). Tourism is an excellent way to promote and provide access to the cultural heritage of a region or country. While it brings money and jobs to cities and regions, it can also negatively impact the daily lives of residents and the area's culture and heritage. This is often seen through consequences such as over-visitation of attractions, overcrowding, cultural appropriation, and loss of authenticity. Beyond its economic aspect, tourism conveys deeper messages to both providers and users of tourism services. Cultural tourism places particular emphasis on communication between activities in the field of cultural heritage and tourism itself as an activity. Sustainable cultural tourism offers a new perspective on these issues by placing cultural heritage and local communities at the centre of decision-making processes for the protection, preservation, and promotion of cultural sites or regions. Involving local communities and stakeholders in these processes is essential to achieve outcomes that benefit both cultural heritage and the local population. In turn, tourism culture includes: maximizing the culture of tourism products, redefining tourism experiences, dealing with the cultural impacts of tourism, and dealing with the changing culture of the industry itself. Cultural tourism is a niche form of tourism that primarily emphasizes the cultural dimension of a trip, promoting cultural sites, events, attractions, and experiences as core tourist attractions. Therefore, its development trends largely reflect trends in the role of both cultural heritage and tourism, duly acknowledging the dual role of tangible and intangible culture and tourism experiences as core elements of cultural tourism. And in this regard, cultural routes occupy their important place in the tourist product. Cultural routes play a significant role in the tourist product. Launched in 1987 with the pilgrimage routes to Santiago de Compostela, the Cultural Routes Program of the Council of Europe is establishing itself as an ambitious but promising program for the development of future activities. In 1997, the European Institute of Cultural Routes (EICM) was also established in Luxembourg. Its task is to study and approve various proposals and ideas for cultural routes, supervise the activities of their implementation, coordinate partner organizations, and disseminate and archive information and documentation related to different cultural routes.

In 2004, the Cultural Routes of South-Eastern Europe were included by the Council of Europe as a new topic under the "Cultural Routes" Programme (Thomas-Penette, 2024a). The recognition of cultural routes as integral components of cultural heritage has evolved through changing perceptions of cultural value. Literature and language, in general, are the alloys that build bridges in cultural corridors. Thanks to language and verbal communication, we can decipher the messages of our ancestors, regardless of whether we are their direct descendants. We can also transmit our own messages to the future or others, and, last but not least, engage in meaningful dialogue. We must preserve the memory of the past, but not only through thought alone. Action is also necessary to ensure that cultural heritage is not merely a precious yet seldom-used brooch, kept safe and worn ostentatiously only on holidays. Yes, cultural heritage must be preserved and protected, but it must also remain alive, serving as a stimulus and a tool for development. Increasingly, we witness how literary routes and tourism expand the geographical reach and knowledge of famous literary figures. Additionally, small and previously overlooked cities, unpopular as tourist destinations, are becoming world-famous attractions.

3. LITERARY TOURISM, LITERARY ROUTES AND DEVELOPMENT OF REGIONS

The culture of each region presents an opportunity for tourism to become a sustainable factor, both in attracting tourist flow to a certain region and in exporting culture and scientific knowledge beyond the borders of the region and the country. According to the International Charter for Cultural Tourism of the International Council for Cultural Monuments and Landmarks from 1999, cultural tourism is defined as a type of tourism that utilizes heritage as a resource. This heritage encompasses the cultural and natural values of the environment, preserving the collective memory of society (12th General Assembly in Mexico, October 1999, 1999). It can be said that this integral resource is divided between two specific types of tourism: cultural (motivated by cultural-historical heritage and the diversity of living culture) and natural, also called ecotourism (oriented towards the natural environment). These two types of tourism most often have a common field of action and develop in territories rich in cultural heritage. Some of the earliest examples of literary tourism are trips to the south of Europe associated with the work of Francesco Petrarca, which took place back in the 15th century. In subsequent centuries, literature continued to play a central role, so literary pilgrimages were popular, mainly among the English elite, who travelled across continental Europe undertaking the so-called "rite of enlightenment" in order to return to their country with a wealth of experience and a wealth of knowledge from the cultural elites of France and Italy. These early forms of tourism were built around non-fictional philosophical, religious and historical narratives and were fundamentally different from the more modern form of literary tourism. At the beginning of the 20th century, literature lovers were keen on searching for places described in popular novels. Thus, an entire tourism industry began to take shape, and often the brand of a space can be one or another literary novel, work or place of residence of a writer. The development of cinema, in particular, the film adaptation of some popular literary works, further influenced the development of literary tourism. It is these factors that contribute to the fact that recently more and more attention has been paid to the scientific study of literary tourism (Hendrix, 2009; Shmavonovna, 2015). The middle of the 1980s was a time when a new phase of tourism appeared, which much more emphasizes and emphasizes the cultural component of tourist experiences. This focus leads to a rethinking of both the sites and the nature of tourism and its impact. The question that arises is: has culture, literature in particular, become simply a convenient marketing gimmick, or has there been a fundamental change like tourism? In other words, is the culture of tourism a fad or a new social form of communication?

Literature as a cultural product can be transformed into various other cultural products. As a medium that conveys events in society, literature can be understood as an effort to abstract various events and serve as an imaginary aesthetic that blurs between fact and fiction. To investigate the role of literary works, authors of literary works, literary characters, and events as an opportunity for tourist attraction, includes two main elements: an overview of all these components on the one hand as literary tourism projects and programs that attract the attention of the public (literary routes), and on the other hand as an object of scientific research, also leading to tourist activities (scientific forums, conferences, round tables). Literary tourism is most often considered a part of cultural tourism or as completely overlapping with cultural tourism. However, it is the literary routes that are considered to be one of the most important drivers of change in the field of tourism. Literary tourism encompasses both tangible and intangible elements, demonstrating the diverse connections between literature and tourism. According to Anne Hoppen, types of literary tourism include:

- Birthplaces of writers: These sites present the writer's life, family environment, and social status to tourists;
- Graves of Writers: Allows visitors to experience a form of spiritual communication with deceased famous writers;
- Tourism related to places of works of art: These are places created in the imagination of the writer, divided into real and unreal;
- Bookstore Visit Tourism: Visitors travel to bookstores to follow the works of a local author and other literature-inspired works;
- Literary festivals: The importance of literary festivals is primarily linked to their role in affirming national identity and reviving tradition (Hoppen, 2011).

Considering a site as a tourist attraction is determined by some factors such as interest, accessibility, amenities, etc. Literature as a cultural product full of cultural value can be used as a tourist attraction, and people can learn and understand the content of the value as well as enjoy the beauty contained in the attractions. Literary works can be used as tourist attractions in the form of museums, historical documents, monuments, historical buildings, as well as people and culture. Tourists' interest in literature is generated by their quest for knowledge, as well as by the traveller's curiosity to investigate more closely the questions about the author, objects, and places described in his favourite works. A location can be a tourist attraction for sure because of the beauty of nature with different variations, climatic conditions, culture and its attractions, history, and legends, ethnicity with its nature, and accessibility (Suyasa, 2019). Literary tourism, as a new type of tourism, requires attractive and inspiring sites for tourists to visit, focusing on authors and their literary works. Creating a travel package for literary tourism requires thorough planning and preparation to ensure the proposed attractions are both enjoyable and educational. The emergence of literary tourism as a tourist attraction in several European countries inspired other countries to use everything. Several factors determine whether a site is considered a tourist attraction, including interest, accessibility, amenities, and more. Literature, as a cultural product rich in value, can serve as a tourist attraction. Visitors not only appreciate the beauty within literary attractions but also gain insight into their cultural significance. Various factors contribute to a location becoming a tourist attraction, including its natural beauty, climate, cultural attractions, history, legends, and accessibility. Effective planning and preparation are essential for creating a literary tourism travel package that is both enjoyable and informative. One of the most visited places in London is the Sherlock Holmes Museum, founded in 1990. It is the world's first museum dedicated to the fictional detective and legendary literary character Sherlock Holmes. The museum is housed in a four-story Victorian building, constructed in 1815. It is listed on Her Majesty's List of Properties of Architectural and Historic Value.

The museum covers the period from 1881 to 1904 when the prolific writer Arthur Conan Doyle described Sherlock Holmes and Dr. Watson living in the home as tenants of Mrs. Hudson. It includes exhibits from various adaptations of Sherlock Holmes and re-creates scenes from the series. The Sherlock Holmes Museum is among the most popular attractions in London. Parallel to the existence of the museum, a tourist tour of Sherlock Holmes has been developed and offered in London, including visits to places used in books, television, and films related to the popular detective. Similarly, tours such as 'Tour of London with James Bond' are organized, alongside tours of the studio of the teenage wizard Harry Potter. The story of the life of famous persons associated with literature can be used as an attraction to familiarize visitors more closely with the place of birth and creation of his works. A very good example in this respect is the house where one of the most famous English writers – Jane Austen – lived in Bath. Set over two floors, the museum is dedicated to the author's life and work but skilfully transports visitors to the traditions of the Victorian era. Guides dressed in costumes from Austen's era provide engaging accounts of the author's experiences during her five years in the city. Original Austen objects and portraits further captivate visitors' attention. Literature as a tourist attraction has not yet received sufficient attention from tourism authorities in Bulgaria. Renaissance house museums are more often part of a historical walk in a given city. For example, in Koprivshtitsa, the birthplaces of two of the classics of Bulgarian literature – Lyuben Karavelov and Dimcho Debelyanov, are part of the overall walk in this museum city but are not considered as part of a possible literary route, despite the small distance of the city from Sopot and Kalofer, where two of the most famous Bulgarian Renaissance writers were born – Ivan Vazov and Hristo Botev. The birthplace and the places where a famous literary figure lived and worked have the potential to establish themselves as a destination for literary tourism. While good practices exist, sustainability is often lacking in many cases. An example of an innovative approach to the promotion of literature as a part of cultural tourism and a factor in the development of the region is the International Scientific and Applied Conference “Regional Development, Cultural Corridors and Media” organized in September 2023. The forum commemorates the 135th anniversary of the publication of the “Rositsa” newspaper in Sevlievo, one of Bulgaria's oldest regional newspapers. Additionally, it honors the 155th anniversary of Mara Belcheva's birth and the 120th anniversary of Fani Popova-Mutafova's birth, both significant figures in Bulgarian literature. The international forum, organized in collaboration with three organizations, facilitated an academic environment for sharing knowledge and science. It also served as a prerequisite for sustainability and the expansion of contacts between cultural and scientific organizations at the national and international levels. Additionally, it showcased the cultural and literary capacity of the region. Literary tourism occurs when authors or their works are popular enough to attract people to places associated with the creator, such as their birthplace, residence, or locations featured in their works, even if only in legend. Places connected with the texts and characters of the respective author also serve as stimuli for literary tourism. This can include visiting a memorial plaque, the author's residence or birthplace, the setting of a literary work, or the route taken by a fictional character. “Read Sofia” Foundation realizes various initiatives that connect the city, literature, and other arts. The events they organize are mostly related to reading and literature. Some of them are: “Hidden letters” and “Literary routes”. The team of the “Read Sofia” Foundation is also behind the overall implementation of 7 (out of a total of 8) editions of the Sofia International Literary Festival of the “Bulgarian Book” Association. One of their most successful initiatives was the creation of the “Literary Routes” project. “Literary routes” appeared for the first time in 2018, when, within the framework of “Hidden Letters”, the “Read Sofia” Foundation made the first literary walks in the city, and they grew into two editions, each with a six-month program. The “literary routes” are not repeated, and every year there is a completely new free program.

Due to the wide variety of interesting stories and approaches in the creation of the routes, they created an archive that everyone can access on their website (Literary routes Sofia, 2024b), creation of the routes. They created an archive that everyone can access on their site and from where they can be requested. "Literary Routes" are tailor-made city tours led by writers and poets, theorists in various fields, and literary historians. Each "Literary Route" has its own host who has created this boutique city tour especially. The authors of the itineraries in the two editions so far have been: Angel Igov, Georgi Tenev, Zornitsa Hristova, Ivan Dimitrov, Kaloyan Pramatarov, Katya Zografova, Laura Shumkova, Maria Kasimova-Moase, Miglena Nikolchina. Literary tourism occurs when authors or their works are so popular that people are attracted to those places associated with the creator, such as his birthplace, the home where he lived, the place where he resided, even if only a legend. Provocation for literary tourism is also the place that is connected with the texts and characters of the respective authors. This can include things like visiting a memorial plaque, visiting a place where the author lives or lived, the setting of a literary work, or the route taken by a fictional character. Visiting these places adds substance to a visitor's stay in a particular place and, last but not least, allows an educated, worldly-curious challenging, and experiential audience looking forward to interacting with the authors they admire to see or touch household items or memorabilia related to a writer or his works. All of this pertains to how cultural resources can be integrated into the broader concept of regional development, particularly in tourism. Here, it's crucial to take an important step: ensuring that the region's cultural heritage extends beyond mere visitation. If cultural heritage is limited to visitation, the potential for "profitable cultural tourism" is lost. This encapsulates the essence of a trend that emerged over four decades ago: mere visitation is insufficient. What's pivotal is providing an experience that fosters empathy and motivates visitors to return or recommend the route to others. Yes, it requires a lot of investment, but not only that. To create an interactive museum of an author, in which you will be greeted by guides dressed in clothes of his era, served drinks in sets from the time in which he created or with the help of modern technologies, you can be transported to the places where he lived – this undoubtedly requires funds. But to talk with love and attitude about iconic places in your city – this does not require so much money, and with good and adequate application of marketing mechanisms and tools, it can bring popularity and subsequent profit for the relevant settlement. All those local people who know first-hand the cultural life of a given city or region can contribute to the realization of such ideas. It is they who can present the literary history and modernity of their city in a way that few experts can. Even in the smallest settlements, there are literary clubs, local poets, and students with an interest in the field of literature – they are that priceless spiritual capital of the spirit, which will not be a walking pamphlet, but a person telling with an attitude about its established harbingers. This may be the first step towards the greater goal – new opportunities for the development of the region through literature and cultural routes. This is precisely where the intersections can be found between every member of the local community and the possibility that culture and literature can attract a tourist flow to a certain region. One of the important and active mediators in this regard is the local media. They are the ones who have the tools to establish themselves and literature as factors for the development of the region. In the pages of the regional media, questions related to the intersections between the wealth stored in the cultural corridors and the present can be and are discussed from the point of view of the vision for the future of the region. Because I believe, and practice has proven, that investments in spiritual values can also bring material benefits. By getting involved in the preparation and coverage of any cultural or educational event, the regional media are the ones who introduce the community to what is being created at the local level, including on the literary front. Everyone captivated by the magic of the word is that invaluable human and spiritual capital that each region has and that can be involved in its presentation and promotion through its proposals to create attractive cultural routes based on experience and enhancing knowledge.

Residents, with their first-hand knowledge of the cultural life of a city or region, can significantly contribute to implementing these ideas. This is where the intersections between every member of the local community and the potential for culture and literature to attract tourists to a region lie. Regional media platforms often discuss the intersection of cultural heritage and the region's future vision. I firmly believe, and experience has shown, that investing in spiritual values can yield tangible benefits. Regional media play a pivotal role in introducing the community to local cultural and educational events, including those related to literature (Todorova, Padareva-Ilieva, 2015; Tashev, 2024c; Arcos-Pumarola, J., Osácar Marzal et al., 2020).

4. CONCLUSION

Literary tourism can be used to trace the presence of literature within tourism activities and the influence of tourism on the popularity of literature. Regarding literature as a tourist attraction, both entities can mutually benefit from the profitability and hospitality offered by literature, thus supporting the presence of tourism. The involvement of the region's residents in presenting living cultural products not only transcends the boundaries of their micro-communities but also shares the accumulated knowledge about people, ideas, and places. This transformation turns the region into an integral part of a literary route and a comprehensive cultural product. Literature contributes to regional tourism popularity through the creation of facts and mythologies surrounding authors, characters, literary routes, culinary traditions, riddles, and other intriguing elements. Branding tourist destinations after literary characters or events offers a win-win strategy with a lasting positive impact on regional tourism. Additionally, literary relics such as premises, books, and valuables serve as tourist attractions, fostering appreciation for writers and their work.

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FINANCIAL ANALYSIS OF E-COMMERCE COMPANIES: APPLYING HARVARD BUSINESS SCHOOL FRAMEWORK

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ABSTRACT

This study employs the Harvard Business School framework to assess the performance of five prominent e-commerce companies. Utilizing financial ratios as analytical tools, the research aims to gain insights into the economic and financial landscape, focusing on indicators such as liquidity, solvency, profitability, and risk. Data sourced from a financial platform and company reports available online facilitate a thorough examination of the e-commerce market. Spanning four years from 2019 to 2022, the study offers a longitudinal perspective to capture evolving trends and patterns. Strategic, accounting, financial, and prospective analyses are conducted for each company, followed by a comparative study to identify common characteristics and forecast future growth prospects within the e-commerce sector. Findings highlight the importance of long-term reputation management and technological development for strategic success. Furthermore, recommendations emphasize the need for companies to enhance their debt management and solvency levels to ensure financial stability and resilience in a dynamic market environment.

Keywords: *Harvard Analytical Framework, E-commerce Companies, SWOT Analysis, Economic-Financial Analysis*

1. INTRODUCTION

Advancements in information technologies and the process of globalization have significantly reshaped organizational business models. Among these changes, e-commerce has emerged as a prominent method, utilizing the Internet as a distribution channel to market and sell goods and services, thereby reducing overhead costs associated with traditional retail, such as inventories, storage space, and personnel expenses (Fruhling & Digman, 2000). Fruhling & Digman (2000) argue that e-commerce facilitates rapid and efficient implementation of growth and geographical expansion strategies for companies. This is achieved by providing access to new markets, enabling the extension of existing product lines to new geographical areas. Oudan (2010) underscores the value creation potential of the e-commerce business model, emphasizing its role in fostering sustainable competitive advantages, profit maximization, enhanced production efficiency, and increased overall productivity. According to Muda et al (2019) E-commerce companies require integrated internal controls in accounting information systems to minimize risks related to transaction validity, authorization, and property security,

ensuring effective decision-making for internal and external parties. Zhang and Liu (2020) The study highlights how responsibility accounting, particularly focusing on product groups, drives innovation and success in e-commerce companies like pseudonym "H," offering practical guidance for management accounting tools in China. Hu (2021) discusses how a computerized accounting system centered on management and financial departments can effectively adapt to e-commerce, guiding enterprise development in China since 1979. Țugulschi, Cușmăunsă, and Curagău (2022) discusses accounting challenges in online goods sales, focusing on various payment methods. It highlights uncertainties in transactions and the need for clear accounting practices in e-commerce companies. Beirne, and Stewart (2002) states that e-commerce firms rely on labor and knowledge-intensive assets, limiting debt finance use so equity is preferred, but poses governance risks. The capital structure of Chinese e-commerce companies impacts performance Zhang, et al (2022). Similarly, Niu (2016) maintains that e-commerce companies' sustainable growth is influenced by their financing structure. His analysis shows discrepancies between actual and sustainable growth rates, highlighting the importance of adjusting financing structures for long-term success. Following Roman (2022), e-commerce companies exhibit higher liquidity, stable financial conditions, and independence from external creditors compared to traditional firms. They prioritize network development and user acquisition over profitability. To gain insights into the economic and financial structures of e-commerce firms, we analyzed five leading international benchmark companies utilizing e-commerce models within their respective sectors. Our methodology, based on the Harvard Business School framework, comprises five key areas:

- Financial Strategy Analysis: Examining the company's financing, investment, and capital distribution policies.
- Financial Statements Analysis: Portraying the company's financial position and performance over time using indicators such as Return On Equity (ROE), Return On Investment (ROI), and profit margins.
- Trend and Pattern Analysis: Identifying trends in financial performance and assessing sensitivity to internal and external factors.
- Relative Performance Analysis: Comparing the company's performance with its direct competitors in the industry.

Sun (2020) further elaborates on the Harvard framework, dividing it into strategic analysis, accounting analysis, financial analysis, and prospective analysis. This comprehensive approach encompasses assessing internal and external environments, studying financial statements, analyzing economic and financial indicators, and projecting long-term development and growth. Furthermore, Fan (2022) highlights the systematic nature of the Harvard framework, which provides comprehensive insights into company operations for informed decision-making by management. In this context, Zhong (2020) defines the Harvard framework as a strategic analysis method, that integrates qualitative and quantitative analysis to assess the company's financial position, operational performance, and future development trends comprehensively. Additionally, SWOT analysis serves as a valuable tool for evaluating internal strengths and weaknesses, as well as external opportunities and threats (Sammut-Bonnici & Galea, 2015; Gurl, 2017). This aids strategic planning by identifying resources, trends, and factors impacting business performance. The objective of this study is to analyze the economic and financial status of five e-commerce companies utilizing the Harvard framework. Qualitative and quantitative data from financial platforms and reports spanning from 2019 to 2022 form the basis for calculating economic and financial ratios and support the analysis. The analysis includes liquidity indicators, activity ratios, profitability metrics, and capital structure ratios. Prospective analysis is conducted to anticipate risks and future development prospects for each company.

2. METHODOLOGY

This study delves into companies exclusively operating within the realm of e-commerce, spanning various sectors for a comprehensive analysis. Below, we summarize each case selected for examination:

Name	Code	Sector	Country	Stock Exchange
Amazon.com, Inc.	Case 1	General Marketplace	USA	NASDAQ
Booking Holdings Inc.	Case 2	Accommodation and Travel Marketplace	USA	NASDAQ
Ebay Inc.	Case 3	General Marketplace	USA	NASDAQ
Farfetch.com	Case 4	Fashion and Footwear Marketplace	Portugal	OTC markets
Uber Technologies, Inc.	Case 5	Transport Marketplace	USA	NYSE

*Table 1: Summary for each case selected
 (Source: Own elaboration)*

- Case 1: Amazon Founded in 1994 by Jeff Bezos, Amazon started as an online bookstore, expanding over time to offer a diverse range of products at competitive prices, solidifying customer loyalty. Amazon operates under a Business-to-Consumer (B2C) model, directly selling to end consumers.
- Case 2: Booking Holdings Inc. Established in 1996, Booking Holdings Inc. operates as a digital online travel agency, facilitating bookings for flights, hotels, rental cars, and more. Its business model relies on partnerships to negotiate exclusive deals and provide customers with diverse travel options globally.
- Case 3: eBay Founded in 1995, eBay connects sellers and buyers through both direct sales and auctions, offering a wide array of products, including new and used items. Its unique business model, encompassing Consumer-to-Consumer (C2C) and B2C transactions, eliminates distribution costs, providing a significant advantage.
- Case 4: Farfetch.com Launched in 2008, Farfetch.com stands as a leading global luxury goods marketplace, showcasing renowned brands in the fashion industry. Its innovative marketplace model allows brands to list products on the platform, enabling seamless transactions and worldwide accessibility.
- Case 5: Uber Established in 2009, Uber operates as a private passenger transportation marketplace, connecting drivers and passengers through a smartphone application. Its multilateral platform model thrives on increasing user interactions, thereby enhancing service availability and value for both drivers and passengers.

Data for this research, sourced from Investing.com and Stock Analysis On Net, along with financial reports from company websites, facilitated the analysis. Notably, the technology giants under scrutiny trade on major stock exchanges such as NYSE and NASDAQ, except Farfetch, which utilizes the OTC market. Investing.com provided comprehensive financial information, while Stock Analysis On Net supplemented missing data. The NYSE and NASDAQ serve as vital platforms for trading securities, particularly for technology companies, with the DJIA index measuring stock performance on the NYSE. Additionally, over-the-counter (OTC) markets facilitate trading of various instruments but carry higher risk due to lack of regulation. The economic and financial analysis employed twenty key ratios, categorized into liquidity, financial balance, profitability, operation/activity, and business risk, analyzed over the period 2019 to 2022. These ratios were computed using available data and further supplemented by interpretative analysis of company financial reports.

3. RESULTS PRESENTATION

The analysis that follows is divided into strategic analysis, accounting analysis, financial analysis, and prospective analysis.

3.1. Stratig analyses

As recommended in the Harvard Business School framework, a SWOT analysis was carried out to better understand the market position of each case.

Case 1: Amazon Internal Environment:

- **Strengths:** Amazon boasts a diverse product range, mitigating dependency risks. Its focus on fast delivery enhances customer loyalty. The company's global reach and sales prowess capitalize on local markets. Its user-friendly platform enhances the consumer experience. Financially, Amazon demonstrates consistent sales growth, indicating a well-implemented business model.
- **Weaknesses:** Dependency on third-party sellers poses risks of counterfeit items. High shipping costs strain finances. Vulnerability to cyber attacks threatens platform security and customer data confidentiality. **External Environment:**
- **Opportunities:** Amazon can expand into emerging markets and diversify services like health and finance. Further global expansion can broaden its customer base. R&D investments can enhance services and introduce new products.
- **Threats:** Competition from Walmart and Target intensifies. Counterfeit products erode consumer trust. Dependency on third-party sellers risks revenue loss. Cyber attacks pose security threats.

Case 2: Booking Holdings Internal Environment:

- **Strengths:** Dominance in online travel with a robust portfolio. Technological infrastructure ensures real-time data processing. Revenue generation via commissions minimizes capital expenditure.
- **Weaknesses:** Dependency on third-party platforms and external factors like economic crises and natural disasters. Reliance on online platforms exposes vulnerabilities to cyber-attacks. **External Environment:**
- **Opportunities:** Increasing travel trends present growth opportunities. Diversification into new markets like vacation rentals can enhance revenue streams.
- **Threats:** Competition from Airbnb and Expedia intensifies. Technological advancements require constant adaptation. Regulatory changes and external events impact profitability.

Case 3: eBay Internal Environment:

- **Strengths:** eBay connects global buyers and sellers. Easy platform access fosters a wide product range. PayPal ensures secure transactions.
- **Weaknesses:** Dependency on PayPal limits payment innovation. Complex website design affects user experience. Slow expansion due to regulatory hurdles. **External Environment:**
- **Opportunities:** Expansion into emerging markets and new product/service areas. Utilization of smartphone apps and social media for broader reach.
- **Threats:** Competition from Amazon and Alibaba escalates. Counterfeit products tarnish reputation. Regulatory and tax variations affect operational costs.

Case 4: Farfetch Internal Environment:

- **Strengths:** Global presence and brand partnerships in luxury fashion. Technological innovation enhances the shopping experience.

- Weaknesses: High costs and dependence on luxury brands. Vulnerability to supply chain disruptions. External Environment:
- Opportunities: Expansion into new markets and product categories. Emphasis on ethics and sustainability.
- Threats: Competition from luxury e-commerce rivals. Legal challenges and supply chain disruptions pose risks.

Case 5: Uber Internal Environment:

- Strengths: Global presence with a user-friendly app. Lower prices and service variety attract customers. Venture into multiple service sectors.
- Weaknesses: Financial losses and legal/regulatory challenges. Dependency on driver-owned vehicles affects service quality. External Environment:
- Opportunities: Technological innovation and market expansion. Strategic partnerships can enhance brand positioning.
- Threats: Competition from emerging platforms like Bolt and Lyft. Driver discontent, cyber attacks, and regulatory issues pose risks.

3.2. Accounting analyses

Following, a comprehensive review of the balance sheets of income statements is presented for each company.

Case 1:

- Inventories and cash fluctuated over the years, indicating dynamic operational strategies.
- Current assets slightly decreased from 2021 to 2022, while long-term assets continued to rise.
- Total assets consistently increased, indicating steady expansion.
- A significant increase in total liabilities was observed, mainly influenced by non-current liabilities.
- The absence of long-term loans led to a higher proportion of current liabilities.
- Non-current liabilities exhibited a substantial growth rate.
- Equity demonstrated consistent growth, reflecting efficient capital utilization.
- Net sales and operating profit experienced fluctuations, with a notable decrease in 2022.
- Income before income tax followed a similar trend, reflecting fluctuating profitability.
- Net profit decreased significantly in 2022, driven by declining revenue.

Case 2:

- Current assets played a significant role in total asset growth, enhancing liquidity.
- Total liabilities increased steadily, particularly driven by non-current liabilities.
- Equity experienced fluctuations but remained positive overall, suggesting varying financial strategies.
- Sales exhibited a decline until 2021 due to the global pandemic, followed by a slight recovery.
- Profitability was significantly impacted by the pandemic, with a notable decrease in 2020 and 2021.

Case 3:

- Overall, the company witnessed incremental growth until 2021, followed by a decline in assets, liabilities, and equity.
- Cash and short-term investments exhibited a progressive increase, albeit not substantial.

- Both current and non-current liabilities increased gradually, impacting the company's debt structure.
- Revenue growth remained relatively stable until 2021, with a slight decline in 2022.
- Net profit decreased in 2022, attributed to reduced consumer purchasing power amid a global recession.
- Case 4:
- Notably, the company faced bankruptcy in 2020 due to negative equity.
- Subsequent years saw a remarkable increase in equity, influenced by non-controlling shareholders and profit reserves.
- Total assets and liabilities exhibited stable growth, primarily driven by non-current assets and liabilities, respectively.
- Revenue showed stability, with a slight increase in 2021.
- Operating results remained negative throughout the study period.
- Net profit fluctuated, influenced by market perception and financial events.

Case 5:

- Current assets decreased over the years, while non-current assets experienced fluctuations.
- Total assets demonstrated positive growth, indicating operational efficiency and resource adequacy.
- Growth in total liabilities, particularly non-current liabilities, indicated long-term financial obligations.
- Equity fluctuated, reflecting varying financial decisions and market conditions.
- Revenue and net profit experienced significant declines in 2020 due to the pandemic.
- Despite the challenges, total revenue exhibited consistent growth, reflecting operational expansion.
- Loss before income tax and profit increased notably in 2022, indicating ongoing financial challenges.

3.3. Financial analyses

According to the Harvard methodology, the analysis must cover Liquidity, Financial Balance and Solvency, Profitability, Operational Capacity, Development Capacity; Business Risk.

Case 1:

- General liquidity and immediate liquidity remain reasonable, albeit decreasing in 2022.
- Overall liquidity remains above one from 2019 to 2022, indicating short-term investment capacity sufficient to pay off debts.
- Immediate liquidity indicates a minimal ability to meet immediate debts.
- The structure ratio suggests the predominance of non-current liabilities in stable resources.
- Financial autonomy indicates reliance on external financing rather than equity.
- The debt structure ratio demonstrates low pressure on the treasury, with around 50% of total liabilities as current liabilities.
- The solvency ratio reflects low equity compared to liabilities, albeit showing improvement over the study period.
- Operating return on sales exhibited fluctuations, with a significant decrease in 2022.
- Net return on sales varied over the years, showing a decrease in 2020, followed by an increase in 2021 and another decrease in 2022.
- Net return on sales was consistently lower than operating return on sales, indicating lower net profit compared to operating profit.

- Return on assets decreased in 2022 due to declining return on sales and increased assets.
- Return on equity showed an increasing trend until 2021, followed by a steep drop in 2022.
- A high inventory turnover ratio indicates efficient inventory management.
- Reasonable turnover of total assets but declining trend in sales generation efficiency.
- A decrease in equity turnover reflects declining efficiency in generating turnover relative to equity value.
- The current asset turnover ratio is consistently above one, indicating high operational efficiency.
- Between 2020 and 2022, Amazon faced a challenging trend in sales, dropping by approximately 149%, largely due to the global pandemic's impact.
- Despite this, there was an upward trend in total assets during the review period, indicating Amazon's resilience and ability to maintain revenue generation and business expansion efforts.
- Net income initially fell from 2019 to 2020 but gradually increased thereafter, mirroring the fluctuation in the operating income growth rate.
- The degree of operating leverage increased significantly from 2020 to 2022, indicating heightened economic risk.
- Conversely, the trend in financial leverage was downward, indicating low financial risk.
- The combined leverage ratio decreased from 2019 to 2022, suggesting a reduction in overall risk.

Case 2:

- General liquidity indicates satisfactory capacity to meet short-term financial commitments.
- Immediate liquidity in 2019 was minimal, reflecting a low capacity to meet immediate debts.
- The liability structure ratio suggests medium to long-term debt dominance.
- Financial autonomy remains low, with a high level of debt financing.
- The debt structure ratio is low, with non-current liabilities forming a small proportion of debt.
- The solvency ratio indicates a risk for creditors, with equity insufficient to cover liabilities, particularly in the medium to long term.
- Operating return on sales fluctuated, with a negative variation in 2020 followed by a progressive increase until 2022.
- Net return on sales showed a similar trend, with a decrease in 2020 and a subsequent increase.
- Return on assets exhibited a decrease until 2020 and an upward trend thereafter.
- Operating return on assets was higher than return on assets in recent years.
- Return on equity decreased until 2020 but increased afterwards due to rising total revenue.
- Fluctuating turnover rate of total assets, with a recent increase indicating improved sales generation.
- Current asset turnover ratio above one, indicating high operational efficiency.
- An increase in equity turnover signifies enhanced efficiency in turnover generation.
- Booking Holdings experienced an upward trend in revenues from 2020 to 2022, positioning the company well to meet its short-, medium-, and long-term obligations. This growth also positively influenced the growth rate of net income.
- While the operating result increased initially from 2019 to 2020, it faced a dip in 2021 before rebounding in 2022.

- Total assets exhibited an upward trajectory from 2019 to 2021, indicating robust revenue generation and business expansion efforts.
- Operating leverage increased from 2021 to 2022, indicating greater economic risk.
- Financial leverage decreased from 2021 to 2022, but significant financial risk remained due to high debt levels.
- The combined leverage ratio decreased from 2021 to 2022, indicating reduced operational and financial risk.

Case 3:

- General liquidity increases over the study period, reflecting growth in sales and cash equivalents.
- Immediate liquidity fluctuates, showing low capacity in earlier years and improvement later on.
- The structure ratio favours non-current liabilities, indicating stability in resources.
- Financial autonomy remains low, with a significant reliance on borrowed capital.
- Debt structure ratio highlights medium to long-term debt predominance.
- The solvency ratio shows improvement over time but still indicates low equity compared to liabilities.
- Operating return on sales remained steady over the years, indicating consistent operational performance.
- Net return on sales demonstrated reasonable figures until 2021, followed by a decline in 2022.
- Return on assets showed a positive trend until 2021 but turned negative in 2022.
- Operating return on assets was higher than return on assets in select years.
- Return on equity grew until 2020 but declined afterwards due to decreased net income.
- Decreasing asset turnover suggests underutilization of resources and declining efficiency.
- Declining current asset turnover but remains above one, indicating high operational efficiency.
- A decrease in equity turnover reflects declining effectiveness in generating turnover relative to equity.
- Revenue growth was inconsistent over the four years, with a drop in 2019, followed by growth until 2021, then a decline to negative levels in 2022.
- eBay demonstrated positive operating results in 2020, but this trend reversed in subsequent years, ending with negative growth in 2022.
- Net profit showed growth of 86% from 2019 to 2020 but declined thereafter. Total asset growth was negative in 2019 and 2022, signalling financial difficulties and management challenges.
- Operating leverage decreased from 2019 to 2021 but increased in 2022, reflecting higher economic risk.
- The operating leverage resulted in a 2.92% change in operating results for every unit percentage change in turnover in 2022.
- Financial leverage fluctuated, peaking in 2021, indicating high financial risk.
- The combined leverage ratio decreased from 2019 to 2020 but increased in 2021, indicating higher overall risk.

Case 4:

- General liquidity fluctuates, with a decrease in 2022 but overall capacity to meet short-term commitments.
- Immediate liquidity suggests reasonable capacity to meet immediate obligations.

- The structure ratio shifts toward non-current liabilities, indicating stability.
- Financial autonomy is minimal, with reliance on borrowed capital.
- Equity is not a significant funding source, with a high level of debt financing.
- The solvency ratio fluctuates, with equity insufficient to cover liabilities in some years.
- Operating return on sales indicated weak profitability over the study period.
- Net return on sales showed reasonable figures until 2021, reflecting the company's ability to generate net income.
- Return on assets remained unattractive, with negative values in the initial years.
- Operating return on assets declined due to increased assets and decreased operating income.
- Return on equity fluctuated, showing a positive trend in recent years.
- Declining inventory turnover but still high, indicating efficient inventory management.
- Increasing asset turnover suggests improved sales generation efficiency.
- Current asset turnover is consistently high, reflecting strong operational efficiency.
- Fluctuating equity turnover, indicating varying effectiveness in turnover generation.
- Farfetch experienced a significant decrease in total revenue over the study period, dropping by approximately 61%. This decline was attributed to high debt levels and extended payment times.
- The operating result trended downwards initially, reflecting cash shortages, but sharply increased in 2022.
- Net profits decreased significantly, indicating poor efficiency, while total assets showed a downward trend, signalling reduced revenue generation and business expansion efforts.
- Operating leverage showed negative values over the study period, indicating a drop in operating income despite revenue increases.
- Financial leverage decreased initially but turned negative in subsequent years, reflecting increased business risk.
- The combined leverage ratio showed an upward trend, indicating heightened business risk from 2019 to 2022.

Case 5:

- General liquidity decreases over the years, indicating a struggle to meet short-term obligations.
- Immediate liquidity is minimal, reflecting a low capacity to meet immediate debts.
- The structure ratio varies, but reliance on medium to long-term debt is evident.
- Financial autonomy remains low, indicating a strong dependence on borrowed capital.
- Equity is not a primary funding source, with a significant portion of financing coming from liabilities.
- The solvency ratio indicates a risk for creditors, with equity unable to fully cover liabilities, particularly in the medium to long term.
- Operating return on sales revealed weak profitability throughout the study period.
- Net return on sales was negative, indicating higher financing costs and taxes compared to income.
- Return on assets showed unattractive figures and a negative trend, suggesting reliance on borrowed capital.
- Operating return on assets was negative but showed improvement over time.
- Return on equity remained negative, signifying the company's inability to generate attractive returns for investors.
- Increasing turnover of total assets indicates improved sales generation over time.
- Fluctuating current asset turnover, suggesting varying operational efficiency.

- Declining equity turnover signifies decreased efficiency in turnover generation relative to equity.
- Uber faced a decline in total revenue from 2019 to 2020 due to market constraints but witnessed growth from 2020 to 2022, driven by increased earnings.
- The operating result growth rate decreased from 2020 to 2022, reflecting the company's strong financial dependence and vulnerability to creditors.
- Net profit exhibited an upward trend from 2019 to 2021 but fell sharply in 2022, and total asset growth turned negative, indicating a financial crisis.
- Operating leverage exhibited negative values, indicating a drop in operating income despite revenue increases.
- Financial leverage fluctuated, with significant risk observed in 2021 due to high debt levels.
- The combined leverage ratio showed negative values, trending upwards from 2019 to 2021, indicating increased business risk. In 2022, the risk decreased compared to 2021.

3.4. Financial analyses

Following the Harvard Business School framework, the future prospecting for each company is outlined below:

Case 1: Amazon

- Amazon's global presence offers extensive business opportunities, promising positive business evolution and results. However, a meticulous analysis of financial risk situations is imperative.
- Despite the challenges faced by e-commerce companies, Amazon stands out in maintaining long-term growth rates by issuing shares and increasing debt strategically.
- Leveraging customer data for personalized offerings contributes significantly to Amazon's growth and profitability.
- Amazon's adaptive business model continuously evolves to tackle emerging challenges and capitalize on opportunities.
- While expanding investments impact liability quality, Amazon's growing total assets and strategic focus on technology and R&D position it for sustainable development.

Case 2: Booking Holdings

- Despite fierce competition in the travel sector, Booking Holdings maintains its market position through robust investments in technology and marketing.
- Continuous R&D investment, effective management, and a diverse product portfolio provide Booking Holdings with a competitive edge.
- Strategic partnerships and innovative technologies offer promising prospects for Booking Holdings in the travel industry.
- Proactive environmental considerations ensure Booking Holdings is well-prepared to leverage new opportunities and mitigate risks.

Case 3: eBay

- eBay, a major player in e-commerce, faces increasing competition due to technological advancements and market competitiveness.
- To stay ahead, eBay must innovate, diversify its offerings, and align with consumer trends amidst economic and regulatory fluctuations.
- Managing exchange rate fluctuations and increasing R&D investment are crucial for eBay's market positioning.

- Despite short-term income fluctuations, strategic R&D investment enhances eBay's competitive advantage and market resilience.

Case 4: Farfetch

- Farfetch tackles various operational risks through robust risk management practices, including internal control systems for risk analysis and treatment.
- Leveraging innovative technology, luxury brand diversity, and consumer-centric approaches, Farfetch leads in the luxury fashion market.
- Investing in blockchain technology and sustainability initiatives enhances Farfetch's competitive edge and prospects.
- Increasing fixed asset investment strengthens Farfetch's commercial operations and overall stability.

Case 5: Uber

- Uber capitalizes on development opportunities driven by technology advancements, incentive policies, and market demand.
- Careful management of operating costs amidst market expansion is essential to maintain profitability.
- Uber's sustainability vision aligns with evolving market trends, positioning it advantageously.
- Strategic investment in R&D and innovation strategies tailored to Uber's unique strengths drive future progress.
- Compliance with e-commerce regulations ensures Uber's operations align with legal requirements, safeguarding customer privacy and mitigating regulatory risks.

4. RESULTS DISCUSSION

Case 1 represents a company with a solid market position and a successful track record over the years, mastering critical success factors in its business. Economic analysis reveals a significant decline in earnings and results in recent years. Profitability and productivity have shown negative variations over the four-year study period. However, the company demonstrates financial stability in 2022, despite a strong financial dependency and vulnerability to creditors. Overall, Case 1 is on an upward development trajectory, benefiting from a favourable market environment for e-commerce companies. Yet, it must devise its strategies and avoid capital outflows. The analysis indicates favourable earnings evolution in the last three years, accompanied by positive expenditure trends, specifying significantly positive results variation. For Case 2, there's a higher sensitivity to global economic conditions, evidenced by a decrease in business volume during the COVID-19 pandemic, leading to unfavourable results. However, the company exhibits liquidity to meet both short and long-term financial obligations. Financial ratios highlight the company's financial dependence. Profitability and productivity indicators have increased over the study period, aligning with total revenue growth. Strategically, Case 3 must ensure a long-term reputation and focus on technology development. Despite reasonable performance, the company faces increasing competition and technological progress, demanding more efficient operations. Accounting and financial improvements are necessary, with a focus on short-term solvency and careful expansion to avoid resource waste. After strategic, accounting, and financial analysis, Case 4 appears to be in a crisis. The company struggles to balance asset and liability maturities, leading to insufficient liquidity. Improvements in asset turnover, increased investment in research and development, and a focus on top-tier products are recommended to enhance profitability. Profitability has fluctuated negatively, aligning with declining results. Solvency decreased from 2019 to 2020, then increased through 2022, indicating increased investment and cash flow.

However, diversification and investment seem lacking during these years, reflecting inefficient management. Case 5 mirrors Case 1's solid market position and success, yet faces a declining net result over the study period, accompanied by rising operational expenses. The onset of COVID-19 resulted in decreased demand and unfavourable business outcomes. However, the company exhibits liquidity to meet its financial obligations, both short and long-term. Financial ratios reveal the company's financial dependence. Financial analysis demonstrates financial stability in meeting financial commitments. Based on the above results, it is possible to have a comprehensive view of each case, assessing internal and external environments, studying financial statements, analyzing economic and financial indicators, and projecting long-term development and growth. Overall, these companies demonstrate strengths in market dominance, technological infrastructure, and service innovation. However, they face challenges including fierce competition, regulatory hurdles, and security threats, emphasizing the need for strategic adaptation and innovation. The analysis underscores diverse financial performances among the companies, with each exhibiting unique trends and strategies in managing assets, liabilities, and equity. Globally, the income statement analysis reveals diverse revenue trends and profitability among the companies, influenced by external factors such as the pandemic and market dynamics. Additionally, varying cost structures and operational strategies contribute to the observed financial performances. Mostly, the analysis reveals varying levels of liquidity, financial balance, and solvency among the cases, with common themes of high debt levels and reliance on borrowed capital. Despite fluctuations, improvements in financial autonomy and solvency are observed in some cases over the study period. Also, the analysis highlights varying profitability trends among the cases, with some demonstrating consistent performance while others face challenges in generating profits. Regarding operational capacities among the cases, it reveals varying, with some demonstrating efficient asset utilization and turnover generation, while others face challenges in maintaining efficiency and effectiveness. Moreover, revenue growth varied significantly among the companies, while operating income and net profit trends fluctuated. Total asset growth rates were inconsistent across the cases, with negative trends observed for some companies in certain years. In summary, the analysis reveals varying levels of economic and financial risk across the cases, influenced by factors such as revenue trends, debt levels, and operational efficiencies. Each case reveals distinct prospects and strategic imperatives. Amazon's global reach and data-driven approach promise sustained growth, while Booking Holdings' focus on technology and partnerships ensures competitive resilience in the travel sector. eBay faces intensified competition but can leverage innovation and strategic investments to stay ahead. Farfetch's commitment to technology and sustainability secures its position in the luxury fashion market, while Uber's strategic focus on technology, innovation, and regulatory compliance drives its future progress despite market challenges. Each company faces unique opportunities and risks, requiring tailored strategies for sustainable growth and success. Beirne, and Stewart states that e-commerce firms rely on labor and knowledge-intensive assets, limiting debt finance use so equity is preferred, but poses governance risks. The capital structure of Chinese e-commerce companies impacts performance Zhang, et al (2022). Similarly, Niu (2016) maintains that e-commerce companies' sustainable growth is influenced by their financing structure. His analysis shows discrepancies between actual and sustainable growth rates, highlighting the importance of adjusting financing structures for long-term success. Following Roman (2022), e-commerce companies exhibit higher liquidity, stable financial conditions, and independence from external creditors compared to traditional firms. They prioritize network development and user acquisition over profitability. Just like Zhang, et al (2022) our study confirms that financing structure impacts performance. However, contradicting Beirne, and Stewart (2002) and Roman (2022), it does not identify a regular economic-financial structure.

The economic and financial structures of e-commerce companies vary greatly due to their diverse business models, revenue streams, and capital needs. This diversity necessitates tailored financing strategies based on each company's unique characteristics. E-commerce firms operate across a wide spectrum of business models, from traditional retail platforms to niche marketplaces and subscription services. Their revenue streams can include transaction fees, subscriptions, advertising, and affiliate partnerships. Capital requirements vary based on factors like inventory management, technology infrastructure, and expansion plans. As a result, a customized approach to financing is essential. Investors must analyze each e-commerce venture individually to determine the most appropriate funding mechanisms. For example, startup platforms may benefit from venture capital for rapid expansion, while established retailers might prefer debt financing for strategic investments. Flexibility is crucial, as the e-commerce landscape evolves rapidly. Financing strategies must adapt to changing market dynamics to support sustainable growth. By aligning financing with the unique needs of each e-commerce company, investors can optimize capital deployment and foster success in this dynamic sector."

5. FINAL CONSIDERATION

This research offers a comprehensive assessment of the economic and financial performance of five prominent e-commerce companies, employing the Harvard framework for analysis. Through qualitative and quantitative data analysis spanning from 2019 to 2022, we have delved into the financial strategies, statements, trends, and relative performances of each company. The findings reveal diverse financial performances, operational capacities, and growth trajectories among the cases. While some companies exhibit solid market dominance, technological infrastructure, and service innovation, others face challenges such as intense competition, regulatory hurdles, and security threats. Despite varying levels of liquidity, financial balance, and solvency observed across the cases, common themes of high debt levels and reliance on borrowed capital emerge. However, improvements in financial autonomy and solvency are noted in some cases over the study period. Moreover, the analysis highlights varying profitability trends and operational efficiencies among the companies, reflecting their unique market positions and strategic imperatives. Looking ahead, each company must navigate its distinct opportunities and risks, devising tailored strategies for sustainable growth and success in the dynamic landscape of e-commerce. This research serves as a valuable guide for informed decision-making by management, offering insights into the economic and financial structures of e-commerce firms and strategic recommendations for their future endeavours. It's essential to acknowledge potential constraints that may have influenced the findings of this research. Firstly, the reliance on publicly available financial data from sources such as Investing.com and Stock Analysis On Net may introduce data limitations, including accuracy and completeness. Additionally, the use of financial ratios and indicators, while providing valuable insights, may oversimplify the complexities of company performance and fail to capture nuanced aspects of their operations. Finally, the study's timeframe from 2019 to 2022 includes COVID-19 which may influence the performance of companies in different ways. Looking toward future research directions, one promising avenue would be examining the financial implications of environmental, social, and governance (ESG) practices within e-commerce firms, including sustainability initiatives, diversity and inclusion efforts, and ethical supply chain management, which could shed light on the growing importance of responsible business practices in the digital age.

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ARTIFICIAL INTELLIGENCE IN TOURISM: CROATIAN CONSUMERS' PERCEPTION AND ATTITUDES

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ABSTRACT

This paper focuses on applying artificial intelligence (AI) systems in tourism, especially in accommodation and hospitality services, and the Croatian consumer's perceptions and attitudes. Various technology acceptance model theories and previous research in AI development and application in the tourism sector have been cross-examined and presented in the theoretical part of the paper, contributing to the topic elaboration and deeper understanding of crucial influential factors regarding consumer perception and attitudes towards AI in tourism deployment. The research part of the paper presents methods used to collect primary data and outlines, validates and discusses the results obtained. The research data collection method was an online questionnaire using the snowball method created with a series of qualitative and quantitative questions conducted during the 2024 year in Croatia on a representative sample. The research results reveal noticeable differences regarding the specific characteristics in respondents' demographic and socio-economic profiles within their perception and attitudes towards artificial intelligence use and application in the tourism sector.

Keywords: *artificial intelligence, tourism, hospitality, technology acceptance, consumer, perception*

1. INTRODUCTION

Artificial intelligence (AI) has rapidly revolutionized our lives and experiences in a contemporary, technology-driven society. It is defined as "a machine-based system designed to operate with varying levels of autonomy, and that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments" (EU Artificial Intelligence Act 2024). AI's omnipresence is comprehensive and inevitable throughout our socio-economic landscape. The term AI in this paper refers to humanoid robots: modern, high-tech devices that use AI to perform different tasks in tourism and hospitality services. An extensive AI socio-economic shift has consequently overflowed the tourism industry, shaping it into a new AI-enriched and supplemented form through different applications and embedded systems, changing traditional practices and established business conduct. Nowadays, we find different AI systems already embedded in the tourism sector, including recommend systems, personalization systems and techniques, conversational systems (chatbots and voice assistants), forecasting tools,

autonomous agents, language translation applications, intelligent tourism destinations, and humanoid robots (Bulchand-Gidumal, 2022). This paper primarily focuses on presenting Croatian consumers' perceptions and attitudes concerning AI in tourism and hospitality services. The research question was: How do Croatian consumers' demographic and socio-economic profiles influence their perception and attitudes towards AI usage and application in tourism and hospitality services, aiming to benefit service providers and users while contributing to broader frame policy recommendations? The paper comprises five main parts: introduction, literature review, method, sample and data collection, results and discussion. Finally, the conclusion follows, involving research limitations and further research recommendations.

2. LITERATURE REVIEW

Thorstein Veblen's (1899) theory of technological determinism is not a novelty. It leans towards the idea that technological advancements play a crucial driving force and a primary role in shaping socio-economic structures, seeing technological innovations as a critical driver of societal evolution. Changes in technology lead to a broad domino effect shift in the overall societal organization, including its values, norms and institutions. In contemporary society, individuals often engage in extravagant consumption not primarily for practical purposes but to display their social status and wealth. According to Veblen (1899), this behaviour is influenced by the prevailing technological and socio-economic conditions attributed equally towards consumer motives in tourism from its early stage of development (Christou, 2022). In support of the thesis on technological determinism (Veblen, 1899), it is expected by the year 2030 that humanoid robots will make up about 25% of the hotel industry's labour force, performing tasks that were previously performed solely by humans (Bowen & Morosan, 2018). Therefore, predicting and understanding consumer perceptions and attitudes towards implementing technological AI innovation in tourism and hospitality services is highly relevant. The importance of the research topic is additionally emphasized from the aspect of the Croatian tourism and hospitality sector's significant labour force shortage (Gašparović, 2022). Fred Davis (1987), Fred Davis and Richard Bagozzi (1989) developed Technology Accepted Models (TAM), and Venkatesh et al. (2003) advanced a model towards a Unified Theory of Acceptance and Use of Technology (UTAUT). Both theories provide insights into the factors influencing technology adoption, categorized as perceived ease of use, usefulness, behavioural intention, actual system usage, social influence, and facilitating conditions. These models have been influential in shaping research and guiding the development and implementation of new technologies in various domains, including tourism and hospitality service novelties. AI services and humanoid robots are already used throughout tourism and hospitality services, interacting simply and clearly with customers to perform specific tasks. However, the acceptance of AI systems and humanoid robots in the service industry is strongly influenced by customers' perceptions of their similarities with humans (Anthropomorphism theory). Van Pinxteren et al. (2019) show that anthropomorphism drives consumer trust, intention to use, and enjoyment of AI and humanoid robots in the enhanced service sector. It is a practical complementary dimension to the future of tourism and hospitality. It makes it more straightforward for customers to arrange travel and use automated, customized and insightful services available (Samala et al., 2020). Ivanov et al. (2018) reveal in their customer preferences research how consumers' attitudes towards having services performed for them by robots are primarily driven by general attitudes towards robots, a recognition of the advantages of robots compared to humans, experience with robots, and their social skills as defined by TAM and UTAUT theories as well as theory of anthropomorphism. Similar findings confirming anthropomorphism theory as favourable in customer service performance are proven by Christou et al. (2020).

A conceptual model of service robotics in hospitality, including customer experience and feedback, service intelligence, data security, responsibility allocation, and human-robot interaction, brings a systematic review of topics primarily related to future service developments (Yang & Chew, 2021). Proving the positive aspects of AI-enhanced services in tourism was also shown through the analysis of the perceptions of future tourism and hospitality, revealing a significantly positive impact on the willingness of participants to work in a partial robot environment in the future (Palrão et al., 2023). Cheriyan et al. (2022) revealed how AI solutions still do not fully fulfil the tasks given: the need to be more intelligent and keep learning about the various scenarios is advised. Belanche Gracia et al. (2022) reveal how attributions mediate the relationships between affinity toward the robot and customer behavioral intentions to use and recommend service robots. Specifically, a customer's affinity toward the service robot positively affects service improvement attribution, influencing customer behavioural intentions. In contrast, affinity negatively affects cost reduction attribution, which harms behavioural intentions. Finally, human likeness has a positive influence on affinity. Striking the right balance in combining human-supplemented AI services is the ultimate value of the future tourism and hospitality sector. Adoption and implementation of AI, humanoid robots, and automated services in the tourism and hospitality sector are dependent on labour and technology costs, customers' readiness and willingness to adapt to AI-enhanced environments, and cross-cultural characteristics of both consumers and service providers aligned with technological advancements and characteristics (Ivanov & Webster, 2017). We are entering a brave new world of robonomics in all aspects of socio-economic realities, including tourism and hospitality services. With the rapidly declining value of human labour in the tourism and hospitality industry and the rapidly increasing capabilities of AI services and humanoid robots, business models and taxation models must be altered to deal with this new reality (Ivanov & Webster, 2020).

3. METHOD, SAMPLE AND DATA COLLECTION

The research data collection method was an online questionnaire using the snowball method, created with a series of qualitative and quantitative questions conducted during the 2024 year in Croatia on a representative sample. The overall questionnaire construction aligns with Roopa and Rani's (2012) recommendations. It comprises 34 questions, eight related to socio-demographic characteristics, 16 scaling respondents' attitudes (Likert, 1932) towards AI services in tourism and hospitality, and the rest related to the respondent's previous tourism and hospitality experience and future AI technology-supplemented service expectations. The data was collected in March 2024 using a convenient sample of 550 respondents who filled out online Google Forms. Google service data collection enabled direct entry of respondents' answers and sample control. Data are collected according to the principle of snowball (Goodman, 1961). This type of sample does not guarantee the representativeness of the population, but it provides a more representative sample of the general population compared to traditional methods of data collection (LeBlanc et al., 2023). In this case, the sample made it possible to determine the differences in certain socio-demographic groups of respondents. The statistical software SPSS version 21 was used for data analysis. Frequencies were calculated for all variables, and when they were adequate, data distribution tests were performed, most often to test the normality of the distribution. In data analysis, the Chi-square test, Kendall tau-b, t-test, and analysis of variance (ANOVA-test) were performed depending on the types of variables. The paper highlights the results when statistically significant differences at the $p < 0.05$ level were determined.

4. RESULTS AND DISCUSSION

The analysis of the frequency of use in tourist accommodation and hospitality services showed that about a third of respondents use these services on average five or more times a year, representing the largest share. More than half of the respondents use accommodation services more than three times a year. In contrast, only 5.5% of the research participants do not use such services for tourism or business purposes.

Number of services	Frequency of usage of the service						Total
	0	1	2	3	4	5 or >	
Number of respondents	30	105	120	76	41	178	550
% respondents	5,5%	19,1%	21,8%	13,8%	7,5%	32,4%	100,0%

*Table 1: Frequency of respondents' usage of tourist accommodation and hospitality services
 (Source: authors primary data research)*

The respondents' answers differ significantly according to age. Kendall's tau-b coefficient (0.206) is statistically significant ($p < 0.05$), which indicates the existence of a correlation, assuming that age is an independent variable. The difference is visible in respondents who travelled at least three times in one year. There are less than 30% of such respondents aged 18-25, while the share in all age categories is more significant than 50%. Respondents' preferences regarding the frequency of use do not differ according to place of residence (urban or rural population). Men use these services slightly more than women ($\chi^2 = 17.718$, $p < 0.05$), but this difference is mainly seen in the frequency of 5 or more journey times. Overall, 41.7% of men and 26.3% of women travel five or more times yearly for tourism or business purposes. As expected, monthly net income is correlated with the frequency of travel and respondents' usage of tourist accommodation and hospitality services. (Kendall's tau-b 0.297, $p < 0.05$). 51.2% of people with monthly income above 1,901 EUR, 45.8% with income from 1,601 to 1,900 EUR, and 29.2% of respondents with income from 1,001 to 1,300 EUR use tourism and hospitality services at least five times a year. 14% of respondents with a monthly income lower than EUR 680 do not travel even once a year, and only 1.6% of respondents with an income higher than EUR 1,901 do not travel. Work status was also an essential factor ($\chi^2 = 68.955$, $p < 0.05$) in the respondents' travel and service usage frequency, which was certainly expected. 63.1% of unemployed people travel less than three times a year (0, 1 and 2 times a year), 75.7% of students, 48.8% of pensioners and 36.7% of employed people. 36.9% of unemployed people travel three or more times a year, 24.3% of students, 51.2% of pensioners and 63.3% of employed people. Positive student relations towards a partially AI-enhanced working environment are also revealed by Palrão et al. (2023). The situation is expected to differ regarding tourist or business trips abroad or using accommodation and hospitality services. The largest share of respondents travel abroad once a year (31.8%) or twice (21.5%), making up about half of the respondents together. 16.7% of respondents do not travel abroad. Age is a variable by which the respondents differ significantly ($\chi^2 = 33.721$, $p < 0.05$). 13.1% of respondents aged 18-25 travel abroad three or more times a year, and 20.8% have not travelled even once. 43.1% of students travel once a year, while less than 30% of other age groups travel once a year. Respondents aged 55-64 (37.7%) travel three or more times a year, followed by those aged 26-34 (36.7%) and 34.8% aged 35-54. Kendall's tau-b is 0.131 ($p < 0.05$), which confirms a specific connection between the number of trips abroad and the age of the respondents.

	Frequency of trips abroad						Total
Number of trips	0	1	2	3	4	5 or >	
Number of respondents	92	175	118	68	26	71	550
% respondents	16,7%	31,8%	21,5%	12,4%	4,7%	12,9%	100,0%

*Table 2: Frequency of respondents' trips travelled abroad
 (Source: authors primary data research)*

It is also expected that people with higher incomes travel abroad more. In the group of respondents with the highest income (above EUR 1,901), 24% travel abroad five or more times, and 46.4% travel at least three times a year. A similar percentage of respondents (45.9%) also applies to the following income category (1,601-1,900 EUR per month). Questions designed to determine existing attitudes about artificial intelligence followed. Respondents were asked to indicate their degree of agreement with the following statements about AI, with a mark of "1" indicating "strongly disagree" and a mark of "5" indicating "strongly agree."

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	x	SD
Interacting with the AI is exciting and fun.	11,1	10,7	38,4	32,0	7,8	3,15	1,079
Interacting with the AI is pleasant	9,6	15,3	38,9	29,5	6,7	3,08	1,047
AI has its own will and emotions	38,9	28,5	23,8	6,4	2,4	2,05	1,046
People who use AI have a higher social status	23,6	27,6	30,9	14,9	2,9	2,46	1,094
I believe that the widespread use of AI will reduce inequalities in society	22,2	27,5	34,9	12,5	2,9	2,47	1,058

Table 3: Respondents' views on AI application and usage in accommodation and hospitality service (Source: authors primary data research)

Respondents have a slightly positive attitude about the fun and excitement of AIs' pleasance in usage. On the contrary, respondents mostly disagree that AI has its own will and emotions, and most of them do not think that people who use AI have a higher social status or that the spread of AI use will lead to a reduction of social inequalities. However, the analysis of variance (ANOVA-test) ($F=6.368$, $p<0.05$) found that there are specific differences when looking at particular groups of respondents regarding these statements. The ANOVA test revealed a statistically significant difference between the age groups and the post-hoc Tukey B^{a,b} analysis found that the youngest respondents still have a significantly more positive attitude towards the excitement and fun of interacting with AI than all other groups (for them, the arithmetic mean of this variable is 3.55, and for all others around 3.00). Such differences between the groups were also found in terms of comfort. The 26-34 age group is on the borderline but also significantly different.

	Interacting with the AI is exciting and fun			Interacting with the AI is pleasant		
Age categories	N	Subset for alpha = 0.05		N	Subset for alpha = 0.05	
		1	2		1	2
55-64	101	3,00	3,55	233	2,94	
35-54	233	3,01		101	2,97	
65+	37	3,08		37	3,00	
26-34	49	3,08		49	3,10	3,10
18-25	130			130		3,45
Means for groups in homogeneous subsets are displayed.						
a. Uses Harmonic Mean Sample Size = 72,129.						
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.						

Table 4: Tukey B^{a,b} analysis of differences in respondents' attitudes about AI
 (Source: authors primary data research)

Respondents are very homogeneous in their attitudes regarding these issues when looking at the variable frequency of travel in general, especially travel abroad. In other words, respondents who travel very often and those who do not travel at all agree with all these statements. More than half of the respondents (56.4%) have used services that included AI when booking accommodation, talking to chatbots, and using Skyscanner. 31.6% of participants gave a negative answer to this question, and the answer was "No, I do not know, I am not sure", the remaining 12.0%. It was found that respondents older than 65 years significantly reduced these positive responses; namely, only 29.7% of them gave a positive answer to this question ($\chi^2=20.979$, $p<0.05$), which makes them much different from other age groups. It was found that women who used the mentioned services slightly more included some form of AI ($\chi^2=9.257$, $p<0.05$), unlike as reported by Ivanov et al. (2018), where no demographic variables explored played a role in shaping attitudes towards service in hotels by AI humanoid robots. As expected, these services were used more by those who needed accommodation services in general and even more so by those who often travel abroad. People who travel abroad more often need services like Google Translator, which are based precisely on the use of AI. The research also revealed that respondents see that some traditional functions in tourism (such as the receptionist at the front desk of hotels) could even disappear, as in the case of Bowen and Morosan (2018). However, as Sigala (2018) mentions, it is not the case that machines and technologies cannot perform the tasks that humans are currently best at: AI is still more expensive to perform such tasks. Future developments of AI in the service industry can thus augment their contemporary capacities in AI augmentation and hybridization (Benckendorff et al., 2019). In this regard, one of the main challenges of the tourism industry is that it could lose its tangible sense of hospitality (Bowen & Morosan, 2018), which is one of the industry's fundamental features. Consumers' lack of trust (Van Pinxteren, 2019), potential discomfort of using AI-enhanced services, and cost savings will remain untapped (Allmendinger & Lombreglia, 2005; Bitner, 2001), while successfully integrating AI-enhanced service interactions have the potential to benefit both service consumers and providers (Allmendinger & Lombreglia, 2005; Meuter et al., 2000). When humans perceive interaction comfort as high, they tend to anthropomorphize robots with more human-like appearance (Van Pinxteren et al., 2019) and embrace technology solutions in line with the theory of techno determinism (Veblen, 1899).

An additional notion needs to be enclosed, as revealed by Hou et al. (2021), confirming how a destination that is more (vs less) crowded generally motivates tourists to favour robot-provided services rather than those from human staff. Furthermore, their findings reveal that this pattern manifests because more (vs. less) social crowding reduces tourists' motivation to interact with others, as evidenced by the social withdrawal tendency. Regarding this, it is relevant to balance the sustainability and absorption capacities of the destination, especially in premium, high-quality streaming tourism services, keeping the human labour force service as a critical element of top-brand tourist and hospitality service and destination features.

5. CONCLUSION

Technological change's influential role in shaping social structures, patterns of consumption, and the distribution of wealth and power within society has always been a driving socio-economic force, in line with techno-determinist theory. Technology is a driving force behind societal evolution, with economic and social institutions adapting in response to technological innovations and imperatives. While AI revolutionizes all aspects of our experience, the tourism and hospitality industry cannot stand aside. Service providers are to fit consumers' expectations into their services while improving various aspects of traveller experiences and business operations. Widespread adoption of AI potentially raises legal, ethical, social and transhuman issues, cross-cultural and economic challenges and new research that must be carefully addressed to ensure a balanced and equitable approach to AI integration in tourism and hospitality services, an assignment task in our future research challenges. Additionally, responsibility, inclusiveness and collaborative human-robot design and implementation are essential principles to guide future research and practice in this area (Fusté-Forné & Jamal, 2021). Although this research paper is narrowed down to Croatian consumers' attitudes and experiences, we emphasize AI certainty in enhanced tourism experience throughout future developments of experiential services. Its current technological outreach, however, still needs to reach the human touch, which is an essential determinant of experiential tourism, as the results of this research have also confirmed.

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THE IMPACT OF EMPLOYEE SATISFACTION ON ORGANIZATIONAL PRODUCTIVITY

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ABSTRACT

Today's organizations are becoming increasingly focused on ensuring the satisfaction of their employees. The feeling that every employee expresses in different aspects of his employment is called job satisfaction. A number of factors influence how satisfied or dissatisfied an employee is. If the workplace has a positive atmosphere and healthy interpersonal relationships are nurtured, the employee will be satisfied with his job. An employee will be exposed to greater stress and job dissatisfaction if he feels uncomfortable in the performance of his duties or if there is deviant behavior in the workplace. Motivation also significantly affects job satisfaction. Employees who are more motivated will be happier with their jobs. A comprehensive and analytical approach is one of the techniques for measuring job satisfaction. Analytical and global approaches are used in research, but when comparing the results of employees from different work structures, the global approach is more useful, while the analytical approach is more comfortable when comparing people from the same work area. If a person is happy in his position, he will provide better business results, which will increase profits and improve the lower part of the hierarchical structure of the organization. Satisfaction is a variable that is unique in that employee satisfaction or job dissatisfaction has a significant impact on an organization's success or productivity.

Keywords: motivation, organization, satisfaction, employees

1. INTRODUCTION

The subject of this paper is how employee satisfaction can affect the productivity of the organization. The aim of the paper is to determine how and to what extent satisfaction/dissatisfaction affects the productivity of the organization. The question of job satisfaction is a question that modern organizations deal with more and more in their daily business. Good managers strive to invest in interpersonal relationships that have a significant impact on the satisfaction of their employees. If an employee is not satisfied with the way he is treated at work, it will not only have an impact on his productivity, but also on the productivity of the entire organization. Another goal of this paper is to investigate how job satisfaction affects both the organization and its employees. The following scientific methods were used for the preparation of this work: the method of analysis, the method of synthesis, the method of description, the method of induction, the method of deduction and the statistical method. In this regard, the terms of job satisfaction, terms of leadership, terms of material and non-material motivation, terms of job dissatisfaction and terms of employee performance were analyzed using the method of analysis, methods and factors that influence employee satisfaction and their motivation and productivity were determined using the method of description, using the method of description own thoughts, own views on the discussed topic and points of view regarding satisfaction and productivity were described, a conclusion was drawn using the induction method about the influence of employee satisfaction on the productivity of the organization, new knowledge was determined based on the general ones, such as the general concept of

satisfaction, success and productivity as individual concepts and using the statistical method, the conclusions based on the research were presented in numerical form. The work spans four chapters, the first of which is an introduction that describes its content. The second chapter talks about the elements that influence job satisfaction as well as the measures used to evaluate it, explains how motivation and job satisfaction are related, investigates the relationship between motivation and job satisfaction/dissatisfaction, employee performance and productivity, and presents the results of the portal research My job. In addition to the aforementioned survey of the Moj Posao portal, we also conducted our own survey on employee satisfaction and the impact on the organization's productivity. The last chapter consists of a conclusion in which the conclusions obtained on the basis of the treated topic are presented and questions for further research are raised. Through theoretical and field research, we want to find answers to the following research questions:

- **IP1:** Are more than half of the employees satisfied with their work and the environment in which they work?
- **IP2:** Is the absence of a raise or any form of reward the case with most employees?
- **IP3:** Would most employees be more motivated and satisfied if there was a reward system?

2. THEORETICAL PART OF THE RESEARCH

A systematic study of the literature led to the findings presented in this part of the paper.

2.1. Theoretical foundations of job satisfaction

The assessment of job characteristics and emotional experience at work is called job satisfaction. Attitudes about certain aspects of work are thought to contribute to overall job satisfaction. Working directly with people, employment independence, the ability to act according to their own principles, and positive interpersonal relationships at work are commonly cited as causes of satisfaction. (Matijević, 2020) "Job satisfaction is a person's positive feeling about his job, which results from an assessment of the characteristics of that job." (Robbins, Judge, 2010, p. 30) Employee productivity is affected by his level of job satisfaction and the environment in which he works. The sum of positive and negative employee thoughts about the job is also represented by their level of satisfaction with it. It is determined whether the employee's needs, wishes and expectations are met. Additionally, employee behavior and workplace satisfaction are directly related to job satisfaction. (Aziri, 2011) "Daily events in the workplace will affect the employee's level of satisfaction, but these events will not significantly change the employee's overall feeling towards the organization in which he works. Therefore, job satisfaction is an individual's response to specific aspects of the job he performs." (Vidić, 2009, p. 8) Mullins (2010) lists five components of job satisfaction: knowledge area, psychological area, efficiency area, ethical area and tasks.

2.2. Factors of employee job satisfaction

Job satisfaction is measured by looking at many areas of work, and the most significant influence is the tasks, salary, possibility of advancement, work environment, leadership style and co-workers. (Vidić, 2009) According to Žužić and Miljković Krečar (2014), personal and organizational factors influence job satisfaction. "Personal factors are those that an employee "brings" to his work organization, his psychological characteristics (basic personality traits, level of self-esteem, stress tolerance and general life satisfaction) and general characteristics (eg age, gender, education, culture)" (Žužić, Miljković Krečar, 2014, p. 120). Thus, "organizational factors refer to the work environment, i.e. to job characteristics (e.g. workload, work dynamism, required skills, independence, complexity of tasks, feedback on performance and physical working conditions) and organizational policies and procedures (e.g. reward system, quality of leadership, possibility of advancement, organizational culture, participation

in decision-making, group cohesion)" (Žužić, Miljković Krečar, 2014, p. 120) According to Azira (2011) , three factors that contribute to job satisfaction include an organization that is motivated by human values, employee behavior, and organizational activities.

2.3. Instruments for measuring employee job satisfaction

There are two approaches used when measuring job satisfaction, namely: analytical and global approach. "According to the analytical approach, job satisfaction is determined by the different attitudes workers have towards different aspects of work. These aspects can be: salary, working conditions, interpersonal relations in the work organization, etc." (Fiala, Sindik, 2012, p. 2) In this method, job satisfaction is assessed using certain questionnaires that are relevant and reveal differences in many factors related to for business. The advantage of the analytical method is to provide information to managers to help them develop their skills, which affects their level of job satisfaction. On the other hand, the disadvantages of the analytical approach are the resources, most often the time and money needed to create a high-quality questionnaire and evaluate the collected data. (Maškarin, 2005) "The global approach implies that workers are asked about their general job satisfaction, and it is based on the assumption that dissatisfaction with a particular aspect of the job does not necessarily mean dissatisfaction with the job as a whole". (Fiala, Sindik, 2012, p. 2) This method suggests that job satisfaction is greater than the sum of satisfaction with certain job components and that an employee can still be satisfied with their job, even if they are not satisfied with a certain feature. (Šimić Šašić, 2011) This method does not allow measuring the level of satisfaction or dissatisfaction with a certain area of work, but it measures overall job satisfaction. (Maškarin, 2005)

2.4. Relationship between job satisfaction and motivation

"Job satisfaction leads to important organizational outcomes such as productivity, absenteeism and leaving the organization". (Vučković, 2011, p. 11) *Job satisfaction and work performance* - "an organization is productive if it achieves its goals and does so by turning inputs into outputs with the least costs. Therefore, it can be said that productivity is one of the main interests of organizational behavior". (Robbins, Judge 2010, p. 27) *Job satisfaction and organizational citizenship behaviour* - "Organizational citizenship behavior is voluntary (discretionary) behavior that is not part of the formal requirements of the employee's job, but nevertheless promotes the effective functioning of the organization." (Robbins, Judge, 2010, p. 30) *Job satisfaction and customer satisfaction* - "Customer satisfaction is the complete fulfillment of their expectations, that is, a positive feeling or attitude about the service". (Đokić et al, 2015, p. 56) *Job satisfaction and absenteeism* – not coming to work, which is expensive for the employer, is defined by Robbins and Judge (2010) as absenteeism, or absenteeism. *Job satisfaction and turnover* - the term turnover refers to the forced or voluntary permanent departure from the organization. (Robbins, Judge, 2010) *Job satisfaction and deviant behavior in the work environment* - "deviant behavior in the work environment is voluntary behavior that violates important organizational norms and thus becomes a threat to the well-being of the organization itself and its members. They point out that deviant behavior in the workplace is an important concept because it indicates dissatisfaction expressed by employees in various ways, which can lead to serious financial consequences in the organization". (Robbins, Judge 2010, p. 29)

2.5. Leadership and leadership styles

Leadership is described as a process in which a person inspires a group to achieve a common goal. (Northouse, 2010) Leadership is the expression of vision, the embodiment of ideals and the development of environments conducive to action. (Richards, Engle 1986) Under guidance, Northouse (2010) examines a range of qualities that people possess in varying degrees.

Successful leaders possess the following traits, according to earlier research that has attempted to define them: intelligence, including verbal skills and judgment, past academic and athletic success, emotional maturity and stability, dependability, persistence and a desire for continuous achievement, the ability to adapt in diverse groups, and the desire by status and socioeconomic status. (Certo, Certo, 2008) In order to achieve high levels of management, just having management skills is no longer enough. (Certo and Certo, 2008) Instead, the modern manager must combine knowledge and skills to direct the business while showing concern for his employees. The idea of motivation is of fundamental importance for leadership, and it is guided by its inclusion in the fundamental duties of management. It is true that effective motivation often requires little time, money or effort, but it also has the ability to move individuals and actions that, over time, add great value to organizations. Because of this, leaders have an obligation to use their competencies to provide excellent leadership and inspiration. Higher overall goals and business achievements are achievable based on their motivational talents. (Klinčić, 2023)

2.6. Theories of job satisfaction

Throughout history, various theories of motivation have been developed to help research on job satisfaction. Various beliefs that influence employee behavior have served as the basis for theories of motivation. (Varga, 2011) "Locke's theory states that job satisfaction depends on various factors. This theory claims that job satisfaction exists to the extent that the outcome of the job corresponds to the desired outcomes". (Rodić, 2020, p. 3) According to Douglas MacGregor's idea, that is, according to theory X and Y, manager's beliefs influence employee motivation and the overall profitability of the organization. (Varga, 2011) The two-factor theory, also known as Herzberg's theory, "implies that people are happy if they are motivated and that they are unhappy if they are demotivated". (Sindik, 2011, p. 102) Using the assumption that the work people do is what motivates them, Hackman and Oldham created a model of job characteristics. "Adams' theory of equality is about efforts, rewards and reference associates with which we compare ourselves and create a conclusion about fairness". (Novak et al., 2008, p. 110)

2.7. Material and non-material employee motivation and job satisfaction

Motivation is often described as a psychological process that represents "forces outside or within the individual that arouse enthusiasm and persistence in undertaking a certain activity". (Brnad et al., 2016, p. 110) "Individual motivation is influenced by various factors that can be divided into four categories: individual characteristics, characteristics of the work that the individual performs, characteristics of the organization in which the individual works and the wider social environment". (Vukajlović et al. 2012, p. 264) Employee motivation is greatly influenced by management. "In other words, motivation depends on how well one understands employees, their needs and desires. Therefore, it is necessary to gather information about what kind of rewards employees want for successful work and work contribution". (Brnad et al., 2016, p. 112) Employee motivation can be real and intangible. Everything that an employee receives in the form of monetary incentives is considered material motivation. There are two types of material gains: direct and indirect. Examples are wages, incentives and other forms of direct compensation. While indirect material forms include all the benefits obtained from working in the organization, such as pension and health insurance, vacation days, paid time off and more. (Varga, 2011) According to Buntak et al. (2013, p. 213) intangible motivation includes, for example, "reserved parking spaces, stay in official villas, use of official vehicle, etc." In addition, according to Buntak et al. (2013), intangible rewards include things like feedback, organizational culture, flexible work schedules, and recognition of success.

Intangible rewards are more often used alongside tangible rewards because many organizations encourage their employees to achieve the highest possible level of job satisfaction.

2.8. Employee dissatisfaction with work and productivity

Worker dissatisfaction is caused by problems in the organization, such as a hostile work environment, unequal pay, or the importance of the task. (Brčić et al., 2013) "Regardless of the causes, the consequences of dissatisfaction are clear: intentional harmful behaviors in the form of strikes, increased turnover and absenteeism rates, inadequate work efficiency, a drop in motivation and other symptoms that cause business damage in the company itself". (Brčić et al., 2013, p. 282) If the employee is mostly not satisfied with other elements of life, he will transfer this style of thinking to work. (Žužić, Milković Krečar 2014) Long-term job dissatisfaction can cause a number of issues that can negatively affect the worker's personal life, physical health and mental health. Employees who are not satisfied can develop sadness and anxiety, which adversely affects their productivity and ability to work.

2.9. The best employers in 2022

Every year Portal Moj Posao conducts a survey of the best employers in Croatia. There were 6,700 respondents in the survey for the year 2022. It is an anonymous survey that Moj Posao undertakes to carry out which organizations are currently the best to work for in Croatia. Research participants are organizations that voluntarily disclose their participation, and employees of the same organization rate their satisfaction. The best employers are the organizations with the highest results in the employee satisfaction survey. Infinum, Q agency and The Productive Company are the best employers. In addition, all companies participating in the survey for the first time enter the competition for the Best New Entry award, and last year's winner was Kodilion. According to industries, Q agency had the best result in the field of information technology, Rimac Technology in manufacturing, while Logista had the best result in the trade sector. The employee satisfaction survey was conducted last year by 67 organizations, and responses were provided by 6,700 employees (out of almost 8,500 employees in participating organizations), which represents 43% of medium, 36% of small, 14% of large and 7% of micro organizations.

2.10. Employee success and productivity

Measuring the work performance of an employee is a procedure that can be defined as "the monitoring and analysis of work performance is carried out in three steps, which together represent the process of measuring work performance or efficiency: work performance criterion (a criterion representing work performance should be determined), evaluation of work performance (monitoring of work performance and its evaluation is carried out continuously and long-term), feedback (conversation with the employee, solving possible problems and achieving more work activity and work performance" (Požega, 2012, p. 106) It is possible to report qualitatively and quantitatively on monitoring findings. Quantitative expression requires a little more time and effort, but gives better results and reliable data. Qualitative expression is easier and faster, but not as relevant or reliable. After the results, it is vital to get feedback from the employee whose performance was evaluated , which is often unfavorable. Employees should be informed that they can repair and improve their work performance and continue to develop a successful career by understanding the criticism. (Požega, 2012) Some of the mentioned methods differ from each other in terms of level of elaboration, method of application, evaluation criteria and other factors; ranking method, pairwise comparison method, forced distribution method, graphic scales, critical cases, behavioral expectation scales (BARS), behavioral observation scales (BOS).

When evaluating and measuring the performance of employees, numerous objective and subjective questions and errors may arise. Common errors that occur when assessing work performance are (Noe et al., 2006): similarities, contrast, distributional errors, halo error, and siren. Emphasis should be placed on training raters to reduce or eliminate errors during performance appraisals, as these errors are often related to the rater. (Sikavica, Bahtijarević-Šiber, Pološki Vokić, 2008)

3. FIELD RESEARCH OF THE INFLUENCE OF EMPLOYEE SATISFACTION ON THE PRODUCTIVITY OF THE ORGANIZATION

3.1. Research methodology

The research methodology is used to evaluate the research data in this chapter of the final paper. The research questions stated in the paper were determined before the research. The methods used in the work are the following: analysis method, synthesis method, description method, induction method, deduction method and statistical method. For the purposes of this work, primary and secondary data sources were used. Secondary sources of data, that is, relevant professional and scientific literature, were used to create the theoretical framework of the work, related to the observed problem and the subject of the research. In addition to books, scientific and professional articles and Internet sources were used. In the research part of the paper, primary data were collected with the help of quantitative research on a convenient sample of 107 respondents from all over Croatia. The respondents were employees from different organizations. For quantitative research, a survey questionnaire was used as a research instrument. Finally, theoretical knowledge and results obtained through empirical research are connected in order to draw conclusions and recommendations for practice.

3.2. Research results

Of the mentioned 107 respondents, 92 respondents (86%) are female, while 15 respondents (14%) are male. 37.4% of respondents (40 respondents) are under the age of 25, 19.6% of respondents (21 respondents) are aged 26-30. 23 respondents (21.5%) are between the ages of 31 and 40, while 16 respondents (15%) are between the ages of 41 and 50. The least respondents are aged 50 and over, 7 of them (6.5%). Regarding the level of education of the respondents, 5 respondents (4.7) completed primary school, 53 respondents (49.5) completed secondary school, 11 respondents (10.3) completed high school, university the smallest number of respondents was 2 of them (1.9%), while 26 respondents (24.3%) completed a university degree and 10 respondents (9.3%) completed a master's degree. The largest part of respondents works in large companies, 34 of them (31.8%), while the smallest part of respondents works in micro (20 respondents; 18.7%) and small companies (20 respondents; 18.7%), all together 40 of them (37.4%), and 33 respondents (30.8%) work in a medium-sized company. As many as 65 respondents (60.7%) are employed in their organization on a permanent contract, 18 respondents (16.8%) are employed on a fixed-term contract, and 24 respondents (22.4%) are students who are employed through the student union. of the contract. "In addition to your regular salary, what other forms of compensation do you receive?" most respondents, 59 of them (55.1%) answered that they do not receive any form of compensation, 23 respondents (21.5%) answered that they receive bonuses, 20 respondents (18.7%) receive benefits such as flexible working hours, company car, company cell phone and the like, and 16 respondents (15%) receive some other form of compensation. As many as 29 respondents (27.1%) do not receive recognition for their work at all, 14 respondents (13.1%) rarely receive recognition for their work. The largest part of respondents, 33 of them (30.8%) answered that they receive recognition for work done, but not enough, 10 respondents (9.3%) receive recognition for work done occasionally, and 21 respondents (19.6%) receive recognition for work done often.

Furthermore, the respondents had to evaluate the degree of satisfaction with the working conditions at work: 8 respondents (7.5%) gave a score of 1, which means that they are not at all satisfied with the working conditions at work, 13 respondents (12.1%) gave a score of 2, which means that they are not satisfied with all working conditions at work, 29 respondents (27.1%) gave a score of 3, which means that they are both satisfied and dissatisfied with certain things related to working conditions at work. Most of the respondents, 33 (30.8%) gave a score of 4, which means that they are mostly satisfied with the working conditions at work, while 24 respondents (22.4%) gave a score of 5, which means that they are completely satisfied working conditions at work. Only 8 respondents (7.5%) gave a score of 1, which means that they are not at all satisfied with their colleagues or their employer, 11 respondents (10.3%) gave a score of 2, which means that they are not satisfied with their colleagues or their employer, 26 respondents (24.3%) gave a score of 3, which means that the respondents are both satisfied with colleagues and/or the employer at work, 33 respondents (30.8%) gave a score of 4, which means that they are satisfied with both colleagues and the employer, but not completely. As many as 29 respondents (27.1%) gave a score of 5, which means that they are completely satisfied with both the employer and colleagues. Furthermore, 3 respondents (2.8%) rated their success and productivity at work as 1, which means that they think they are not successful and productive at all, 4 respondents (3.7%) rated their success and productivity as 2, which means that they consider that they are not as successful or productive as they should or would like to be, 18 respondents (16.8%) estimated that half of the time they are successful and productive, and half of the time they are not, which resulted in a rating of 3, 44 respondents (41.1%) estimated that they are both successful and productive most of the time, resulting in a score of 4 and 38 respondents (35.5%) gave a score of 5 because they estimated that they are successful and productive all the time at work. Regarding personal and professional development at work, 8 respondents (7.5%) rated 1, which means that they do not have any opportunity for personal and professional development, 22 respondents (20.6%) rated this statement as 2 because they do not have the possibility of personal and professional development, which means that there is a very small but not sufficient chance for personal and professional development, 25 respondents (23.4%) gave a score of 3, which means that there is an opportunity for personal and/or professional development, but not often enough, 22 respondents (20.6%) gave a rating of 4, which means that the respondents have a somewhat more frequent opportunity for personal and/or professional development in the company where they work. As many as 30 respondents (28%) gave a rating of 5, which means that these respondents have frequent and great opportunities for personal and professional development, be it through workshops, seminars, further training and the like. 61.7% of respondents (66 respondents) claim that their level of commitment at work would be higher than before if they received a higher salary, while as many as 41 respondents (38.3%) answered that their level of commitment at work would remain the same even if received a higher salary. Graph 1 shows that as many as 69 respondents (64.5%) do not receive a raise or any other form of reward, and 35 respondents (32.7%) receive a raise or some other form of reward at work. Only 1 respondent (0.9%) in this survey receives an allowance for holidays such as Christmas and Easter. Also 1 respondent (0.9%) receives a bonus as a reward, and only 1 respondent (0.9%) also receives a trinket.

Chart following on the next page

Primate li povišicu ili neki drugi oblik nagrade?

 Kopiraj

107 odgovora

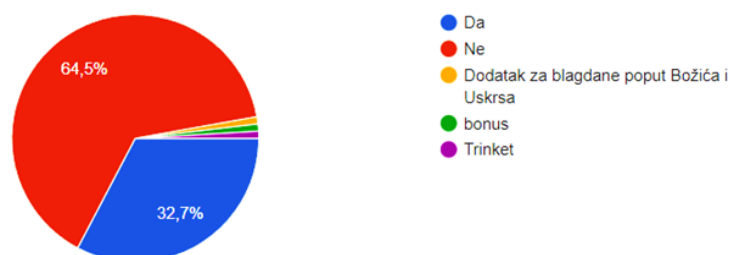


Chart 1 Forms of awards and raises

Source: creation of the author

Out of 107 respondents, 60 of them (56.1%) are dissatisfied with their salary, while 47 of them (43.9%) are satisfied. As can be seen from Graph 2, 86% of respondents (92 respondents) stated that they would be more motivated if the company had a reward system. The remaining 14% of respondents (15 respondents) stated that the reward system in the company would not affect their motivation.

Kada biste u poduzeću imali sustav nagrađivanja, biste li tada bili motiviraniji?

107 odgovora

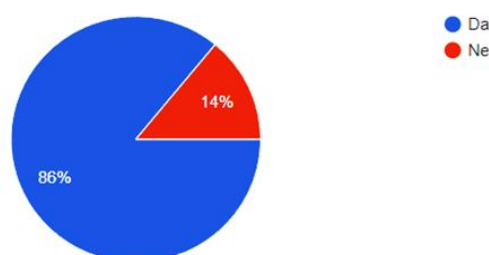


Chart 2: Reward system in the organization

Source: creation of the author

Respondents were also able to express their opinion on what they would change and what could positively affect their level of job satisfaction. 11 respondents (10.3%) would change nothing, 68 respondents (63.6%) claimed that a higher salary would have a positive effect on their level of satisfaction, 37 respondents (34.6%) answered that better working conditions and environment would have a positive effect on their satisfaction, 39 respondents (36.4%) believe that flexible and better working hours would have a positive impact on satisfaction, 50 respondents (46.7%) believe that rewards, incentives, benefits and similarly, 2 respondents (1.9%) did not answer anything, which is considered that nothing would have a positive effect on their job satisfaction, and 1 respondent (0.9%) believes that less imposition of artificially produced pressure on employees by the employer positively affected his/her satisfaction. 1 respondent (0.9%) would be positively influenced by a quality "management team", while the last respondent would be positively influenced by more detailed instructions and coordination from the superior. Graph 3 shows the overall satisfaction of respondents at work, 6 respondents (5.6%) gave a score of 1, which means that they are not at all satisfied at work, 12 respondents (11.2%) gave a score of 2, which means that they are mostly dissatisfied, but there is a very small part that makes them satisfied, 34 respondents (31.8%) gave a score of 3, which means that they are both satisfied and dissatisfied, and 39 respondents (36.4%) gave a score of 4, which

means that they are mostly satisfied with the work, but that there is room for some changes that would make them more satisfied. In the end, 16 respondents (15%) gave a score of 5, which means that these respondents are completely satisfied with everything at work and there is no need to change anything.



Chart 2 Degree of overall satisfaction of respondents at work
 Source: author's work

4. DISCUSSION

Employee job satisfaction and how it affects organizational productivity are fundamental concepts studied in this final paper. Satisfaction, like motivation, is a very complex concept, especially in practice, but it can be defined as: job satisfaction is also defined as a pleasant feeling that results from the perception that one's job fulfills or enables the fulfillment of important business values of that person. Employee satisfaction depends on the business environment in which he is located, other employees, working conditions, salary, superiors, personal needs of the employee. Employee motivation is a very important factor related to satisfaction. So, material and/or non-material motivation can be positive and thus increase the satisfaction of employees who will then have higher productivity, although this does not always have to be the case in practice. The conducted research on the impact of employee satisfaction on organizational productivity confirmed everything previously supported by professional literature. The research was done using the Google Forms tool digitally, and the survey questionnaire was distributed in the same way. The questionnaire referred to all individuals who are employed, be it through a fixed-term, indefinite contract or through a student contract. The productivity of the organization really depends on the satisfaction of the employees. The following answers to the research questions were obtained through theoretical and field research.

- **IP1:** Are more than half of the employees satisfied with their work and the environment in which they work? The conducted research determined that more than 50% of respondents were satisfied overall with their work and business environment. Respondents who are satisfied in some aspects and not in others make up 31.8%, while those who are not satisfied make up 16.8%. Satisfaction with work and the environment is influenced by the difficulty of the work that respondents perform, the amount of salary, recognition for work as well as colleagues.
- **IP2:** Is the absence of a raise or any form of reward the case with most employees? More than 50% of respondents, more precisely 64.5% of them do not receive a raise or any other form of compensation or reward, which is disappointing. Only 35.5% of respondents receive a raise or some other form of compensation. The absence of a reward system can greatly affect and/or affects the productivity and satisfaction of employees in the organization.

- **IP3:** Would most employees be more motivated and satisfied if there was a reward system? The majority of respondents, 92 of them (86%) believe that they would be more motivated and satisfied if the company had a reward system. Those organizations that still do not have an employee reward system should introduce one, because many respondents believe that it would contribute to their satisfaction and productivity and that they would work harder.

In order to obtain the most precise results, it is necessary to conduct a more detailed research in the future. It is necessary to analyze and compare the results of respondents who work in the same workplaces in order to gain a clearer insight into the satisfaction of employees and their productivity and which segment affects the respondents in which way. With the help of more detailed research, it would be possible to come to the conclusion of what motivates and demotivates employees and how to raise their level of job satisfaction.

5. CONCLUSION

Human resource management pays more attention to the issue of job satisfaction because employees are now a key component of any organization. Employee satisfaction is one of the most important measures of organizational productivity. Several factors influence job satisfaction. An employee's output is influenced by his level of job satisfaction as well as the environment in which he works. Job dissatisfaction is often an issue that develops in an organization if it does not take enough care of its employees. The likelihood of job dissatisfaction can be influenced by various circumstances, including the office environment, poor financial situation, working hours, performing tasks outside the job description, and feelings of inferiority. Long-term job dissatisfaction can cause a number of issues that can negatively affect the worker's personal life, physical health, and mental health. Employees who are not satisfied can develop sadness and anxiety, which adversely affects their productivity and ability to work. Human resource management should be high on the list of priorities for managers. Organizations can only succeed if they participate in creating and raising the level of employee satisfaction; more satisfied employees have higher productivity, which ultimately reflects on the success of the organization. Field research was conducted using a survey questionnaire that was created digitally and distributed in the same way. 107 respondents participated in the research, 86% of whom were women. The research found that employee satisfaction is closely related to personal needs, working conditions, working environment, superiors, salary, advancement opportunities, reward system and the like. More than 60% of respondents are satisfied at work, although 64.5% of them do not receive any form of rewards or compensation. Which means that the introduction of reward systems in organizations is of great importance in order to increase productivity. Also, 86% of respondents claim that they would be more satisfied and motivated if a reward system were introduced in organizations. With further and more detailed research, it would be possible to more precisely determine the positions of those respondents and what kind of jobs they do and how much they are paid for those jobs.

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THE ROLE OF THE ISLAMIC DIGITAL ECONOMY IN THE DEVELOPMENT OF THE HALAL INDUSTRY

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ABSTRACT

The Islamic economy has great potential and the integration of halal and Islamic economics will bring many benefits, including a broader market, increased prosperity, increased religious affiliation and digital connectivity. The aim of this study is to contribute theoretically and practically to the halal sector and Islamic digital economy. Another aim is to determine strategies regarding the role of the digital economy in the halal industry. Countries need to overcome a number of problems and challenges in order to realize their digital economy potential. Therefore, it is deemed necessary to examine in more detail the strengths, weaknesses, opportunities and challenges, as well as strategies for the role of the digital economy in the context of the development of the halal industry and the Islamic economy. Therefore, this study was conducted to analyze the strengths, weaknesses, opportunities and threats, as well as strategies regarding the role of the digital economy in the development of the halal industry and Islamic economy in Muslim countries. Research shows that the ultimate strength of the digital economy lies in the high growth in the number of Muslims and the growth in digital transactions. Among the main weaknesses in the use of digital economy in the halal sector; insufficient digital economic capacity to meet the demands and needs of the market, imbalances between digital technologies in various regions, especially urban and rural areas, and lack of information about halal products and halal brands. Also, everything is still quite expensive in terms of production components like internet access, electricity, and costs. In addition, digital economy education does not yet exist and domestic working capital cannot meet digital requirements. The main weaknesses that need to be fixed are the lack of startup capital and professional workers in the digital economy.

Keywords: *Islamic Digital Economy, Islamic Finance, Halal Industry, Halal Economy, Integration*

1. INTRODUCTION

The Islamic economy has great potential and the integration of halal and Islamic economics will bring many benefits, including a broader market, increased prosperity, increased religious affiliation and digital connectivity. According to the "State of the Global Islamic Economy Report 2018/19" prepared by Thomson Reuters, the global halal market, which continues its rapid growth rate, is estimated to reach 9.71 trillion US dollars by 2025. The halal industry is actually becoming one of the most competitive and fastest growing industries in the world. The digital economy provides some new opportunities for the halal sector. According to the ASEAN Investment Report 2018, the digital economy is the application of technology used to create and sell goods/services via the internet.

These initiatives include the internet of things (IoT), three-dimensional (3D) printing, cloud computing, automation, robotics and artificial intelligence, data analytics, digital platforms and blockchain technologies. The growth of two sub-sectors, e-commerce and fintech, shows the growth of the digital economy. In parallel with the development of Fintech, Islamic finance also adopts new digital technologies and offers alternative products and services to customers through new platforms and structures. The aim of this study is to contribute theoretically and practically to the halal sector and Islamic digital economy. Another aim is to determine strategies regarding the role of the digital economy in the halal industry. Countries need to overcome a number of problems and challenges in order to realize their digital economy potential. Therefore, it is deemed necessary to examine in more detail the strengths, weaknesses, opportunities and challenges, as well as strategies for the role of the digital economy in the context of the development of the halal industry and the Islamic economy. Therefore, this study was conducted to analyze the strengths, weaknesses, opportunities and threats, as well as strategies regarding the role of the digital economy in the development of the halal industry and Islamic economy in Muslim countries.

2. ISLAMIC DIGITAL ECONOMY

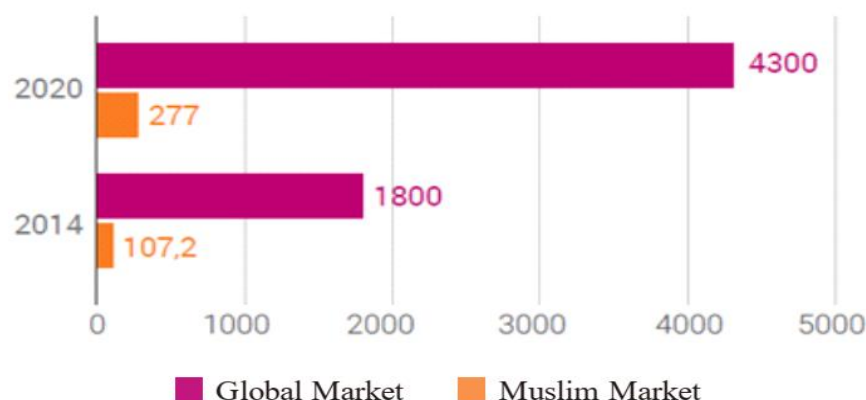
The emergence of the Islamic economy has had significant impacts on the world's social and economic landscape. It is transforming the global economic landscape while transmitting the values of Islam. The Islamic digital economy is not only a sub-segment of the digital economy, but also a manifestation of the integration between technology, business and spiritual values. People are spending more time with their smart devices, which simplifies human routines and daily life. Apps and webs have made financial transactions more cost and time efficient. Islamic economics is based on Islamic beliefs, principles and values. Simply put, these three elements serve as a "way of life" for Muslims and guide their consumption behavior and business practices (Philipp, 1990). Such guiding principles are evident in the Qur'an and hadith, the two main references of Islamic teachings, which command Muslims to be fair in their business ventures and prohibit usury (riba). In Islam, business transactions should also be financed and invested in halal financial resources. All parties involved in the transaction must also fulfill their responsibilities (Mohammed, 2013). During the 2020 pandemic, Muslims worldwide spent \$2.02 trillion on food, medicine, cosmetics, modest fashion, travel and media. This is a growth of 3.2% compared to 2019, but is expected to contract by 8% in 2022 due to the pandemic. The ability and position of countries to capture the potential of the multi-trillion dollar global halal economy is measured using the comprehensive Global Islamic Economy Indicator (GIEI). According to the GIEI, the top three countries best positioned to capture the global Halal economy pie are Malaysia, Saudi Arabia and the United Arab Emirates. The interconnected nature of the digital economy enables it to become an information sharing platform that can improve public services, funds or social services. The digital economy is expected to provide primary, fast and affordable Islamic economy services to various market segments. As the platform is accessible anywhere and anytime, economic activities can improve in terms of efficiency and effectiveness (Maharani & Ulum, 2019). Despite COVID-19, the past year has seen significant developments in the Islamic economy, including the acceleration of digital transformation. There are two key areas for the digital needs of Muslim consumers. The first is general lifestyle needs and the second is lifestyle needs related to Islamic law and spirituality. Practical digital economy solutions are in high demand in the global Halal market and sectors such as consumer goods (e.g. cosmetics and food). Stakeholders of the ecosystem, such as the government and Fintech developers, bear the responsibility to overcome the negative impacts of the COVID-19 pandemic. Fintech startups are slowly becoming new financial services. In the future, they will play an important role in integrating one financial institution (e.g. bank or fintech company) with another (Gomber et al., 2018).



Figure 1: Islamic finance Industry

Although Islamic finance has existed since the seventh century, it has been gradually formalized since the 1960s. Islamic finance refers to how businesses and individuals raise capital in accordance with Sharia or Islamic law. This also includes the types of investments permitted under this form of law. Islamic finance can be seen as a unique form of socially responsible investment. The Middle East is a notable region of activity for Islamic Finance. The Middle East, Africa and South Asia (MEASA) region remains a major player in an industry worth more than \$2.1 trillion, with the growing popularity of Islamic Banking. Shariah-compliant assets represent 14 percent of total banking assets in MEASA and 25 percent of banking assets in the Gulf Cooperation Council (GCC), indicating that Islamic banking continues to be systemically important in these countries. Many cities in the region, from Riyadh to Abu Dhabi, Manama to Kuwait City, Doha to Jeddah and Muscat, are building their reputation as Islamic Financial centers; the GCC consists of Saudi Arabia, Kuwait, Bahrain, Qatar, Oman and the UAE (<https://thefintechtimes.com/islamic-finance-in-the-global-digital-economy/>). Islamic finance has grown exponentially over the last two decades. In parallel with the development of fintech, Islamic finance has embraced new digital technologies, offering alternative products and services to its customers through new platforms and structures. According to the ASEAN Investment Report 2018, the digital economy is the application of technology to create and sell goods and services over the internet (ASEAN Secretariat & United Nations Conference on Trade and Development, 2018). According to an additional definition, "digital" includes those parts of the national economy that rely on digital technology and business models based on digital goods or services. The digital economy also includes new types of economy such as gig, collaborative and sharing economy. The growth of two sub-sectors, e-commerce and fintech, illustrates the growth of the digital economy. Both have shown promising progress over the past few years. According to the Organization for Economic Cooperation and Development (OECD), e-commerce is a transaction involving the buying and selling of goods and services between individuals, businesses, households, governments and other public or private entities over the internet. However, the payment and final delivery of goods and services can be done online or offline. The sharing economy or marketplace platform is also included in the e-commerce category (UNCTD, 2017).

Digitalization also allows us to set three goals: improving the quality of products and services, reducing prices, and improving data collection and management. In the halal food market, data allows us to inform consumers about the entire logistics process leading to the production of any food item they buy.



Graph 1: potential of the Digital Economy sector
 Source: Thompson Reuters (2015)

In 2014, the global digital economy market reached a value of USD 1.9 trillion, driven by e-commerce transactions and digital advertising spending. This market is set to grow by approximately 15% by 2020. Muslims are global strategic consumers in today's global digital economy market. In 2014, the Muslim community represented almost a quarter of the world's population and 5.8 percent of the global digital economy (Thomson Reuters, 2015).

Largest Muslim Population		Highest Purchasing Power	
Indonesia	China	Saudi Arabia	UAE
Pakistan	Ethiopia	Türkiye	US
India	Algeria	Iran	Algeria
Bangladesh	Morocco	Malaysia	Singapore
Türkiye	Sudan	Qatar	Indonesia
Egypt	Afghanistan	Russia	Egypt
Iran	Iraq	France	The Netherlands
Nigeria		Libya	

Table 1: Markets with High Potential for Halal Economy
 Source: Africa Islamic Economic Foundation, 2019

Islamic Finance plays an important role in the global economy and continues to do so in an increasingly globalized digital economy. The importance of Islamic Finance extends to many regions of the world and also embraces fintech and broader digitalization solutions. With an estimated 1.9 billion Muslims, according to the World Population Review, Islamic Finance has a large global reach. While Islamic Finance is still a small share of global finance, it is one of the fastest growing financial sectors. Its total assets have exceeded \$2 trillion and are expected to reach \$3.8 trillion by 2023. According to The Future of World Religion and PEW Research Center, the Muslim population will reach 29.7 percent by 2050. The 2018-2019 Global Islamic Economy Report by Thomson Reuters also states that the Islamic economy is growing steadily, driven by the Muslim millennial population, which continues to increase and is expected to reach three billion by 2060.

According to the Arab Banking Association, ten countries account for 95 percent of the world's Shariah-compliant assets, with Iran accounting for 30 percent of the global total, followed by Saudi Arabia with 24 percent, Malaysia with 11 percent, the United Arab Emirates (UAE) with 10 percent, Qatar with 6 percent, Kuwait with 5 percent, Bahrain with 4 percent, Bangladesh with 1.8 percent, Indonesia with 1.6 percent and Pakistan with 1 percent. In the fintech space, there are at least 127 Islamic fintech companies that have launched globally since last June, offering Shariah-compliant financial products. According to IFN Islamic Finance, the United Kingdom has the highest number of Islamic fintech companies with 27 companies, followed by Malaysia with 19 companies, the United Arab Emirates (UAE) in third place with at least 15 Islamic fintech companies, Indonesia in fourth place with 13 companies, Saudi Arabia in fifth place with 9 companies and the United States in last place, which is reported to have 9 companies. In 2021, 1.9 billion Muslims spent USD 2 trillion on food, pharmaceuticals, cosmetics, fashion, travel, media and entertainment, representing a growth of 8.9% year-on-year. The Muslim population is expected to reach 3 billion by 2060, accounting for 30% of the global population. The rise of ethical consumerism is driving demand for halal-certified products and services due to shared principles. Halal is now rapidly gaining global acceptance as a new benchmark for quality assurance, hygiene and ethical business conduct. Malaysia and some Organization of Islamic Cooperation (OIC) countries have the highest global e-commerce and m-commerce adoption, above the global average of 76.8% and 55.4% respectively. According to DinarStandard, the global Islamic economy is estimated to reach US\$7.7 trillion by 2025. Malaysia is well positioned to be the hub of choice for digital technology companies to capture this market. Global consumer spending on halal products and services (excluding Islamic finance assets) amounted to US\$2 trillion (RM9 trillion) in 2021 and is expected to rise to US\$2.8 trillion (RM12.6 trillion) by 2025 (IDE, <https://mydigitalinvestment.gov.my/islamic-digital-economy>, 2024).

3. HALAL INDUSTRY

Islamic economics is associated with Islamic financial law based on moral rules and religious requirements. The term 'Halal Economy' has become increasingly used since it was coined at the World Halal Forum in Kuala Lumpur in 2011. The Halal economy covers a variety of areas and activities, from ritual slaughter of meat and poultry to food production and retailing, restaurant chains, Halal certifications as well as logistics and transportation. It integrates the production of halal products and the Islamic financial system (Fahrul Irfan Ishak et al., 2013). The halal ecosystem has come a long way to evolve. Although halal products and services are something related to the faith of Muslims, it started to turn into a full-fledged market in the 1960s. The halal market, which started with the demand for halal food products, includes halal fashion, halal cosmetics, halal tourism, halal logistics, halal medicine and vaccines, etc. has now reached its peak with the increasing demand for products. Islamic finance and banking is a 1,400-year-old concept. However, modern Islamic banking and finance began with the start of Islamic banking initiatives in Arab countries in the 1960s (Alam et al., 2021). Now is the time to integrate the two sectors and create a larger 'halal ecosystem'.

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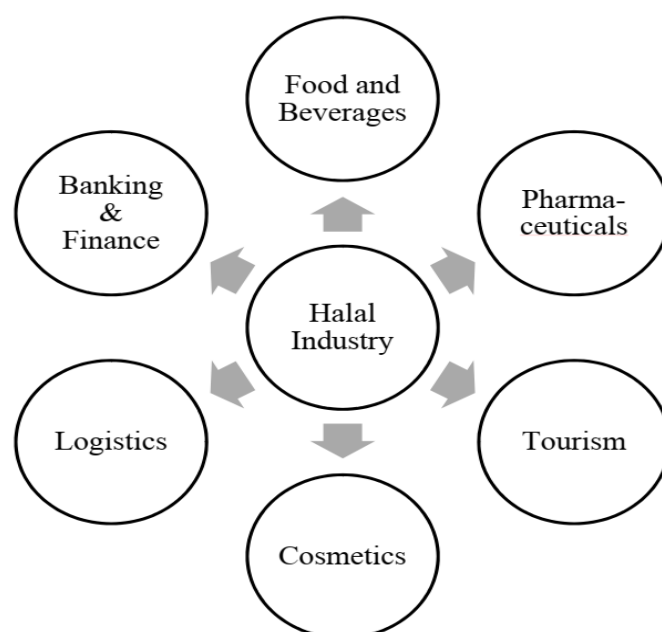


Figure 2: The selected sectors under the global halal industry
 Source: Muhamed et. al., 2014

The State of the Global Islamic Economy Report 2017-2018 reported that global Muslim consumer spending on food, beverage and lifestyle sectors reached US\$2 trillion in 2016, accounting for 11.9% of global spending (Center for Excellence in Islamic Finance, 2016). On a segment basis, Muslims' halal food and beverage expenditures were 1.24 trillion US dollars, followed by conservative fashion with 254 billion US dollars, media and entertainment with 198 billion US dollars, tourism and accommodation with 169 billion US dollars, pharmaceuticals and beverages with 83 billion US dollars. followed cosmetic expenditures. 57.4 billion US dollars respectively. This report also predicts that the halal food industry alone will be worth 1.6 trillion US dollars by the end of 2018 and will reach 2.1 trillion US dollars by 2030.

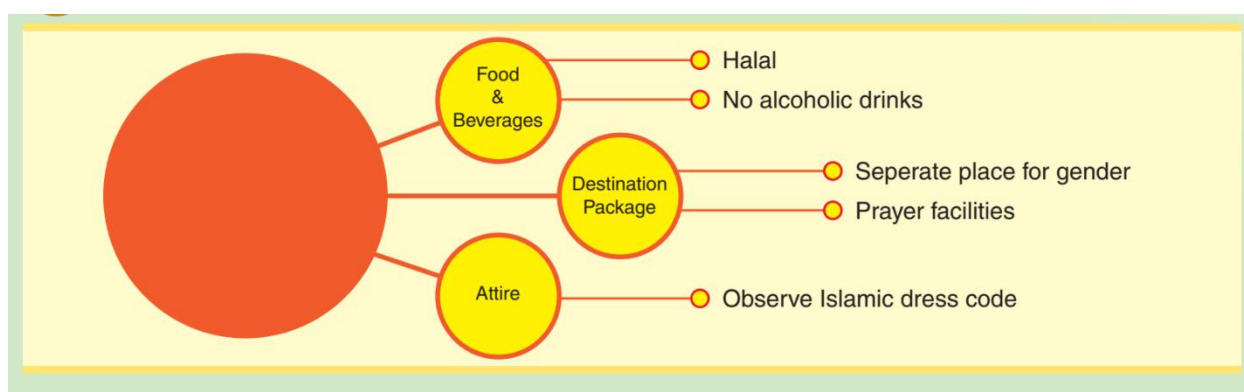


Figure 3: Aspects of Halal Tourism
 Source: Africa Islamic Economic Foundation, 2019

Halal economy is an umbrella term used for the sector consisting of goods and services from the beginning to the end of processes such as finance, food, clothing and fashion, cosmetics and personal care, and travel. Islamic finance and halal industries are both part of the broader halal economy. The halal industry is one of the fastest growing business industries in the modern business world, including the growing demand for halal products by non-Muslims.

The halal market is expected to reach 2.6 trillion US dollars in 2024, from 1.4 trillion US dollars in 2017 (Dinar Standard, 2020). Halal is demanded by Muslim consumers not only for their faith and afterlife, but also for worldly interests. The halal industry has reached its peak recently and has become a new paradigm. The increasing Muslim population in Europe and other western countries has made the halal market more global. The increase in halal literacy among the halal market and its consumers has made it more challenging and sensitive for business owners to run halal businesses. The halal industry is not just about producing and selling halal products and services; rather, it is about creating a comprehensive business strategy (Wilson and Liu, 2010, 2011). The halal industry is on the rise due to the liberalization and globalization of the global economy and the growing Muslim population. Liberalization and globalization have provided an opportunity for multinational companies to reach struggling Muslim consumers and offer them sharia-compliant product and service options based on their faith. The two sectors that play a key role in providing halal product and service options to Muslim consumers are the halal industry, which mainly covers food, fashion, entertainment, travel and lifestyle, and the Islamic finance sector, which mainly provides duly complied Islamic financial services. according to sharia standards (Thomas and Selimovic, 2015). According to the 2019-2020 report published by Thomson Reuters in coordination with Dinar Standard's 'State of the Global Economy Report', 1.8 billion Muslims worldwide spend approximately \$2.2 trillion, with a growth rate of 5.2% on an annual basis . The size of the global Islamic economy, with a compound annual growth rate (CAGR) of 6.2%, will reach approximately 3.2 trillion dollars in 2024 (Dinar Standard, 2020). The key drivers of the overwhelming growth of the Islamic economy can be attributed to factors such as the growing Muslim population, rising per capita income in the Organization of Islamic Cooperation (OIC) countries, increasing religious affiliation, growth in digital technologies and the popularity of ethical consumerism. This shows that the Islamic finance and halal sector is advancing at an incredible pace and the integration of these sectors can make them a global power (Muhammed et al., 2014).

Halal market	2018 data	2024 projection
Halal food	1,369	1,972
Halal fashion	283	402
Halal media and recreation	220	309
Halal tourism and hospitality	189	274
Halal pharmaceutical	92	134
Halal cosmetics	64	95
Islamic finance (assets)	2,524	3,472
Totaş	4,741	6,658

Table 2: State of global halal industry report (Billion \$)
Source: Hassan et. al, 2021

Halal industry integration has great growth potential. The 'State of the global Islamic economy report' published by Dinar Standard in 2019/2020 reveals that 1.8 billion people have a great potential to create their own global Islamic finance ecosystem in parallel with the traditional financial ecosystem. The report emphasized that Islamic finance and halal food industry are the two sectors that make the biggest contribution to the global halal market. The halal food market contributes 1.369 trillion dollars and is expected to reach 1.972 trillion dollars in 2024 with a compound annual growth rate of 6.2%. However, the value of Islamic finance assets is currently around \$2.524 trillion and is expected to reach around \$3.472 trillion with a compound annual growth rate of 5.5% (Dinar standard, 2020).

4. INTEGRATING ISLAMIC FINANCE AND HALAL INDUSTRY

Islamic finance is a natural fit for the global halal industry as they both involve business processes whose operations are based on sharia. The integration of the halal industry with Islamic finance will create a win-win situation for everyone. Since Islamic finance is already known to be ethical, economical and transparent, sharia-compliant financing for the halal sector can enhance their operational and ethical integrity. Integrating these two industries could be a 'holistic branding' where a halal product is financed through halal financing. Halal industry and Islamic finance need to be integrated to create a supply chain of halal products and services in order to create a halal ecosystem (Shafie and Othman, 2006). Halal consumption and businesses are not just about halal ingredients and production processes. It must meet all aspects of Halal and Haram in Islam. Instead of accepting a part of Islam, it is necessary to live it as a whole. Therefore, halal goods should not only be considered from the production stage, but should be followed as a whole, from the purchase of raw materials until they reach the consumer. Ishak and Che Man (2011) provide a discussion on the basis of integration for this sector. According to this argument, Islam is a comprehensive way of life in which guidance is given to guide people. Halal compliance should not be selective in scope but should cover broader dimensions. Ahmad (2008), while analyzing the Sharia literature, related this situation to the principles of contracts (contractors, recognized subjects, and offer and acceptance) and the elements that lead to a bound contract in Islamic Law. Here there are accepted issues regarding products and prices and both should be halal. However, the sector has been criticized for not combining and connecting the halal sector with Islamic financing. This inconsistency was highlighted by the Director of the World Halal Forum 2011, who emphasized the need to link the two sectors (halal businesses and halal financing). The issue of inconsistency and gaps regarding the halal compliance process has been raised but still receives less attention in practice. Thomson Reuters data shows that only 50 percent of the 250 companies in the global halal industry, with a total market capitalization of US\$132 billion, are listed as halal-compliant companies by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). The data revealed that many companies do not benefit from Islamic financing despite producing halal products and services (Muhammed et. al., 2014:122-123).

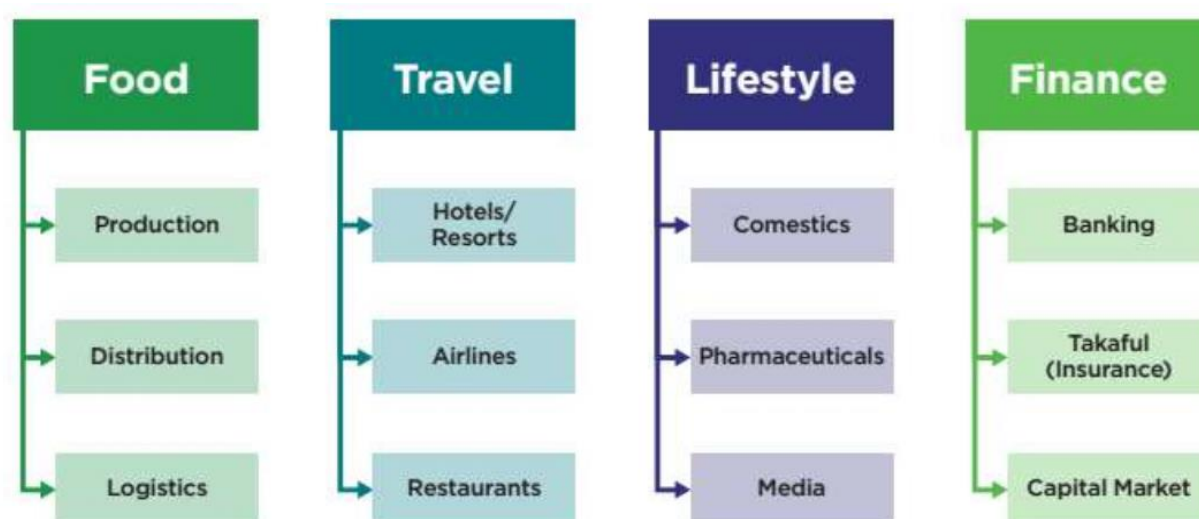


Figure 4: Integrating halal industry with Islamic finance
 Source: Rahim and Shafii, 2015

The halal sector consists of many sub-sectors and goes beyond the traditional halal food sector. In addition to the food industry, meat and poultry, logistics and transportation, tourism and hospitality, pharmaceuticals and vaccines, beauty and personal care, etc.

It also covers sectors. The other part of the figure shows the Components of the Islamic finance industry, which consists of Islamic banking, Islamic capital market such as SUKUK market, Islamic money market, Islamic financial institutions other than Islamic banks, Islamic wealth planning and innovative market: crowdfunding, P2P lending, Islamic cryptocurrency, financial services etc. (Rabbani, 2020). The integration of the two industries can create a larger halal ecosystem that will benefit everyone.

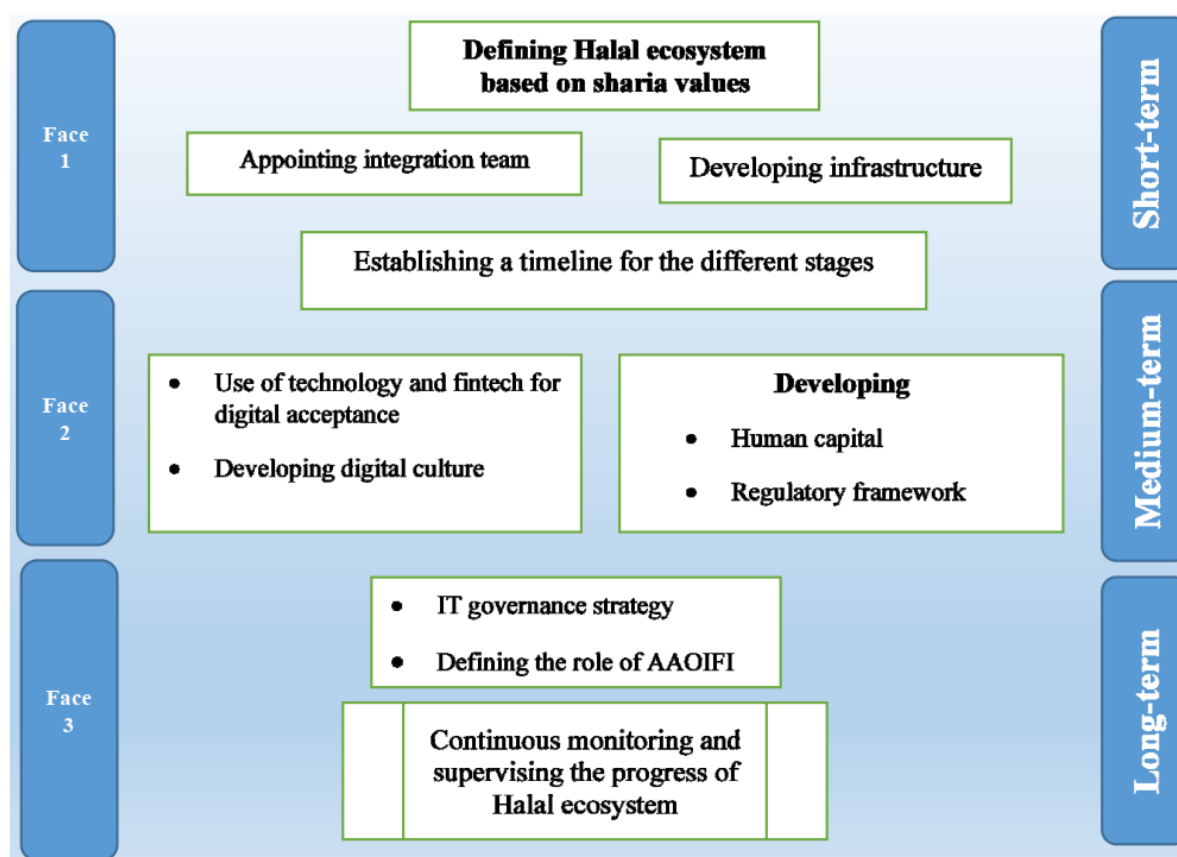


Figure 5: The strategic roadmap for integration of halal and Islamic finance industry
 Source: Hassan et. al, 2021

The figure presents the strategic roadmap for the integration of the halal and Islamic finance sector. As a first step in integrating the two sectors, Sharia principles need to be properly defined in terms of the purpose of the integration and the roles and responsibilities of various stakeholders in the process. It is clear from the figure that the integration should be done in three stages. The first phase will focus on raising awareness about the potential benefits of integration, appointing an integration team to monitor progress, and developing the infrastructure. Phase 2, which is geared towards the environment, will aim to carry out further research and development activities on the use of information technology and fintech for digital acceptance and the development of digital infrastructure for the global halal ecosystem. This period should also be used to improve the humanitarian and regulatory framework (Hassan et. al, 2021).

5. CONCLUSION

Research shows that the ultimate strength of the digital economy lies in the high growth in the number of Muslims and the growth in digital transactions. Among the main weaknesses in the use of digital economy in the halal sector; insufficient digital economic capacity to meet the

demands and needs of the market, imbalances between digital technologies in various regions, especially urban and rural areas, and lack of information about halal products and halal brands. Also, everything is still quite expensive in terms of production components like internet access, electricity, and costs. In addition, digital economy education does not yet exist and domestic working capital cannot meet digital requirements. The main weaknesses that need to be fixed are the lack of startup capital and professional workers in the digital economy. A number of strategies and activities can be carried out to develop an Islamic digital economy in Muslim countries. Digital Islamic economy literacy should be promoted to prepare literate Human Resources in the Islamic digital economy by taking advantage of the high growth in the number of Muslims. More resources should be allocated to technical and vocational education and training related to technology, information and communication. Training can also be developed to meet the specific needs of these businesses. The use of industry 4.0 should be optimized to promote industrial business scale by capitalizing on foreign investors' interest in domestic digital startups. Sharia-compliant finance, regulation and ecosystem in the digital economy should be strengthened. The first thing that needs to be done to increase the use of the digital economy in the halal sector is to code and digitize the data of halal certificates in order to better monitor and manage the local halal industry. In this way, clear information can be obtained about the exact volume, current value and how much of halal products are exported, especially in Islamic countries; Thus, a better mapping can be made in terms of the forward-looking export strategy of halal products. Additionally, an information system that will be the center of digitalization should be created along with other technologies for halal certification, the introduction of QR Codes and other technologies for consumers to identify halal products, and this information system should be integrated into existing halal marketplaces, halal electronic money providers and other halal lifestyle applications used by consumers. The development and innovation of digital infrastructure should be maximized to support the growth of the halal value chain through digital economic development. Businessmen also need to understand digital technology if they want to develop the halal industry. Halal payment methods and online marketplaces can be established. Hatchery offices can be built that can strengthen the public halal value chain and work towards the development of new businesses with worldwide prevalence. In order to promote production process efficiency and innovative financing, an up-to-date technology development center suitable for the halal value chain can be established. To accelerate the development of a comprehensive and efficient Halal economy, the following recommendations can be made: There is a need for more effective policy and strategy coordination between different policy makers and relevant financial sector stakeholders. Establish closer links between Islamic finance and programs that support innovation and productivity improvements. Encourage Islamic finance providers, especially Islamic banks, to engage in public-private partnerships to deliver innovative Islamic finance solutions and scale-up. Strengthening cooperation with policy makers in other countries to advance the use of Islamic finance for the Halal Economy. Increasing the role of relevant institutional investors and expanding capital market financing for the Halal Economy. Increasing data sharing on Islamic finance and Halal Economy.

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HYBRIDIZATION IN EDUCATION, OPPORTUNITIES & LIMITATIONS

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ABSTRACT

The pandemic that broke out a couple of years ago has had its impact on many fields. Education is no exception. In this respect, each and every country in the world has been obliged to get adapted to the newly emerging situation. The present paper discusses the extent to which the pandemic has driven specialists in education to (re)think, and even (re)invent, new teaching methods, approaches, and strategies to meet the urgent needs of learners. In this context, the notion of hybridization imposes itself as one– but by no means the only- viable option. The paper also discusses some of the limitations that this learning method may encounter from both the learners' and parents' perspective.

Keywords: *pandemic, teaching methods, hybridization, limitations, perspectives*

1. INTRODUCTION

Undoubtedly, in its preliminary stages, the pandemic, universally known as Covid 19, has disordered, disfigured, impacted, and even transformed the globe in more than one way. In fact, its influence has had its effects on many a field, one of which is education. Not surprisingly enough, in the very beginning, no one was fully well- prepared to meet that challenge resulting in the lockdown accelerated by the pandemic. Consequently, the move to online platforms, being one amongst the most viable options, has proven its efficiency. The questions that should be raised here are the following:

- To what extent has the pandemic driven specialists in education to (re)think, and even(re)invent, new teaching methods, approaches, and strategies to meet the urgent needs of learners?
- What are the limitations of these “new” learning methods and strategies?
- How do learners and parents view online platforms?

The aim of this paper, then, is to examine - and discuss – the above-mentioned questions. To this end, the paper will be divided into some parts, each of which will try to shed light on the different issues related to the topic under analysis: hybridization in education, opportunities, and limitations. The paper will be concluded by putting forward a number of recommendations. Before digging deeper into the subject, let us shed light on online activities in their early beginning.

2. BRIEF HISTORICAL FOUNDATIONS

Important to note is that online undertakings as pedagogical tools are not as new a development as some -or many- of us may imagine. According to Abrahamse, A., Johnson, M., Levinson, N., Medsker, L., Pearce, J. M., Quiroga, C., & Scipione, R. (2014). Educators and others have sought to use information technology to link young people in classrooms around the world since at least the late 1980s. Accompanying these classroom efforts were research projects, often designed and implemented by the educators implementing the exchange. The body of research focused on virtual exchange will only continue to grow as adoption and use of this practice becomes more widespread. Few resources describe this research landscape holistically, so practitioners and scholars can be isolated from other research and findings. Virtual exchange has the potential to become a part of all educational institutions, but understanding what is

known and what questions still need to be answered about this practice is an important step toward wider adoption.¹ What one can visibly infer from the above-quoted citation is that virtual and online exchanges are not something new. On the contrary, they are dated back to the 80's where information technology had been used as convenient tutorial utensils to connect -though to a lesser extent- students worldwide. The Covid 19 pandemic has accelerated the process where online learning has proven appreciated and operative. Put simply, online education is not a new issue. COVID-19 pandemic has been a driving force for embracing online learning in education in general (Chan, Bista, & Allen, 2021). This leads us to the core question: to what scope has the pandemic driven experts in education to (re)think, and even(re)invent, new teaching devices, approaches, and strategies to meet the imperative needs of learners?

3. THE USE OF THE NET AS A CROSSING POINT BETWEEN LEARNERS AND TUTORS

Needless to reiterate that in 2019, the eruption of pandemic Coronavirus distressed, and even shocked, the whole globe. The plague has driven universities and institutes to move from face-to-face classes to distant education. This has put a wide range of learners in the obligation to embrace that shift. This change could not have been possible without education specialists (re) thinking and (re)inventing new educational methods to face the newly emerging situation. The Net has been the base upon which their educational (re) innovation has been built. The selfsame experts have put forward, not without efforts, detailed -and pioneering- procedures whose main goal is to offer impartial and wide-ranging admittance to online educational materials, guaranteeing thus that key-related schooling requirements are being met.

According to the **OECD "Strength through Diversity"** project framework (2020), which has laid the stress on the insertion of students -being in a weak social position- within the digital paradigm, educational specialists argue that. While the most vulnerable students might not have access to digital learning resources, some governments and civil society organizations have to provide these students with computers or tablets as well as internet access, or they -better still- have to organize teaching through television, phones or radio.² Underlying the above-cited statement is the fact -or the assumption, that the role civil societies have played in enhancing the use of technology for the less fortunate categories of population should not be underestimated. Worth noting is that such actions have provided an enormous help for such categories to pursue their schooling in such difficult sanitary conditions. Equally important to note is that though governments and civil societies have joined forces to maintain learning programs during the Pandemic, still some challenges have emerged and the need to overcome them has imposed itself in several ways.

4. KEY LIMITATIONS OF THE "NEW" LEARNING METHODS AND STRATEGIES

It is taken as axiomatic by a large number of people that the "new" learning methods and strategies imposed by the Pandemic could be applicable for each learner. This mindset has proven its fallacy. There are some learners that are different from the "normal" ones as they have some specific needs. In the ensuing lines, we will try to shed light on this category and present some remedial solutions. According to Al Lily et al., (2020), learners with specific needs are inept to get acclimatized with online classes as they may have trouble to successfully engage in e-learning. More than that, such a category -oftentimes- shows its disinclination to have teachers get their attention- while delivering online classes- on a systematic core. In this respect, Buchnat & Wojciechowska (2020) have tried to explain such an attitude by indicating that this type of students may be highly heavily contingent to "established study relationships

¹ *Journal of Studies in International Education*, 19(2), 140-159. doi: 10.1177/1028315314540474

² <https://oecdeditoday.com>

and may experience severe anxiety as a result of its disruption.”³ Worth noting, in this context, that a respectable number of students coming from a poor background lack the necessary tools of education that can only be tangibly accessible at school. In this regard, under such distance educational conditions imposed by the Pandemic, it may be extremely hard, if not unmanageable, to work for a set of goals that unavoidably presupposes, and even compellingly requires, an uninterrupted and close collaboration. In presenting their respective arguments about the topic under analysis, Agoratus, (2020) and Bakkaloglu & Ergin, (2020), agree- though in different terms- that Covid-19 Pandemic has made the interaction and relationship between teachers, parents and students tremendously restricted.⁴ Put simply, there are some learners who find it next to impossible to follow courses if they removed, and alienated, from their “classical” learning physical environment. This surely would pose several issues for the tripartite components: students, teachers and, of course, parents -bearing in mind that online classes can by no means be conducted without adequate electronic tools! Ironically, the situation may get even worse when the equipment is obtainable for teachers but unavailable for learners. Interesting to mention, in this context, that some parents may, partly or wholly, have a share of responsibility regarding the utilization of online learning as a substitute for face-to-face schooling. It is true that some learners are not fully engaged in distant classes due to the fact that either they do not have access to the Net or simply because they lack the electronic gadgets necessary for that learning process. However, in some instances, even parents consciously or / and unconsciously strongly oppose, and categorically reject, the online learning strategies, powerfully considering that such online schooling is useless, meaningless, and even worthless for their children. Such parents build their judgment on the assumption, and firmly believe, that “through face-to-face communication, students [may] develop social skills that can be achieved through emotional connection, eye contact, physical touch, empathy, and collaborative learning.”⁵ Some studies (Bakkaloglu, H., & Ergin, E. (2020). have also shown that, in some few cases, teachers could be held responsible for not technically delivering online classes in an appropriate way, and consequently fail to meet the learners’ expectations. This may be noticed when, at times, teachers’ lap and / or desktops or, worse still, their smartphones work with flaws, making thus the learning process quite malfunctioning. Other defects may be embodied in the quality of the image and sound while giving distance classes. This does by no means mean that only parents and teachers are to blame. In fact, learners’ responsibility *vis-à-vis* the online learning process is considerable and should not be neglected. We are told that “excessive use of gadgets negatively affects the physical and psychological condition and development of children.”⁶ This can clearly be noticed *via* their attitudes related to e-learning. For most of them, smartphones, and laptops, being the necessary paraphernalia to achieve online learning, are seen only as tools meant for amusement, pleasure, and entertainment. They consequently find it hard to use them to acquire knowledge and assimilate lessons as they get worn-out, and even exasperated, easily and quickly. As if that were not bad enough, such a category of learners does not stand the idea of being “locked” at home all day long facing their laptops and engaging in online and virtual educational activities. Here the role of parents in encouraging their kids to perceive online learning in a constructive way seems very inviting.

5. PARENTAL ROLE IN ENHANCING THE E-LEARNING PROCESS

Nobody denies the fact that the contribution of parents in supporting online education is of paramount significance to the perpetuity of such schooling. The parents’ responsibility, as it is universally recognized, consists of, among other things, “providing food, clothing, shelter, a

³ Buchnat & Wojciechowska (2020)

⁴ Agoratus, (2020) and Bakkaloglu & Ergin, (2020)

⁵ Sigirtmac, A.D. (2020).

⁶ Boulton, H. (2008). *Managing e-learning: What are the real implications for schools?*

place to study and school material supplies" (Epstein 1987). Based on that, we can safely say that parental involvement, and heartfelt commitment, contribute to making their kids achieve a decent academic score and an effective learning performance. It is undeniable, then, that without satisfactory parental engagement, distance schooling would only be an illusory enterprise! In line with that, a study, extraordinarily conducted by *Tran et al.* (2020), has shown that the more parents afford their offspring the necessary emotional, technical backing, the more their cognitive development would prosper.⁷ It follows that there exists a close relationship between parental positive commitment and virtual learning engagement amongst youthful learners. This is partly because the learners' motivation largely-but by no means exclusively- depends on the way parents perceive their educational development. All that said, the question that remains to be asked -and then answered- is the following: what is the place of hybridization in all that? The ensuing section will try to shed some light on that issue.

6. HYBRIDIZATION AS A LEARNING STRATEGY ENCOMPASSING ONLINE AND FACE-TO-FACE CLASSES

We all know that the Pandemic has made face-to-face learning quite impossible as stated earlier within these pages. This has driven educational specialists to devise new teaching and learning methods and strategies to ensure the continuity of learning amongst students confirming thus the adage saying that "necessity is the mother of invention." One cannot admit for sure that the Pandemic is over and that we are back to the 'old' normal. It is true that the Pandemic is not as perilous as it was a couple of years ago. However, the Pandemic has made us (re)think and (re)invent other teaching and learning devices to meet the requirements of the 'new' normal. A panoply of amazing learning approaches has come into existence during the Pandemic, and I strongly believe that it would be a deadly error, and even an unforgivable deed, if we neglect them when face-to-face classes are officially resumed. Here the notion of hybridization, calling for a blend between physical classes and virtual ones, intensely imposes itself.

7. KEY OPPORTUNITIES

Intentionally uniquely maintaining the physical learning environment (face-to-face) while deliberately neglecting the virtual one (online classes) may not lead to the wished-for results. In fact, adopting a combination of both strategies, i.e., face-to-face and online, would enable learners to astoundingly excel in their schooling process thereby rapidly assimilating their respective lesson, swiftly preparing their homework and speedily doing their assignments, to name but a few! This could be conducted through a well-planned schedule. Below are some carefully selected- but not exclusively limited- stages to be observed as suggested by some educational specialists:⁸

- **Stage 1: Preliminary knowledge.** Learners are kindly invited to finish preliminary learning tasks- for instance, reading textbooks- for the forthcoming face-to-face classes.
- **Stage 2: Assurance Development.** Once in class, learners show a sort of self-confidence during their learning process as the lessons they are exposed to have already been tackled and are familiar with during the preparatory phase.
- **Stage 3: Group work discussion.** This stage mission is to invite learners to constitute small groups, the aim of which is to share ideas, give opinions and compare results.
- **Stage 4: Inter-group talks.** Once the three afore-mentioned stages have been successfully achieved, the task that follows hard upon is the extension of the small group arguments to a larger discussion whose primary goal is to reach an overall understanding of the topic under scrutiny.

⁷ Tran, T., *et al.*, (2020) 'Toward sustainable learning during school suspension'

⁸ Shimizu I, Matsuyama Y, Duvivier R, van der Vleuten C. Contextual attributes to promote positive social interdependence in problem-based learning: a focus group study. *BMC Med Educ.* 2021;21(1):222.

The designated stages shown above may be held as academically rewarding if rationally implemented in an appropriate way. A good mix between physical schooling and virtual learning may enable students to take advantage of the two learning strategies and may lead them, consequently, to perceive online learning not simply as a substitute to face-to face “*apprentissage*” but rather as an undivided and full-fledged component of the learning process in general. Yet, resistance to that hybrid method can always persist as its opponents advance some limitations with regards to its enactment.

8. KEY LIMITATIONS

Everybody admits that the Pandemic has immensely changed the way one looks at education. Learners have been forced to move from one method of learning entirely based on the physical contact and socialization to social distancing and online classes. The experience resulting in students spending longer hours before their laptops has shaken their belief in online learning and has negatively impacted their academic performance. As far as educational specialists are concerned, if the negative perception of students who have experimented with online classes during the Pandemic is highlighted, what would be the attitude(s) of the youngsters who have never been exposed to online learning? For those experts, hybridization in education would not be as successful as one may imagine. This is due to a respectable number of reasons that we may point out to only some of them below:⁹

- Youngsters expect their respective teachers to be physically available for them anytime they need them.
- The appropriate learning environment cannot be other than school. Laptops and smartphones are gadgets meant for fun than anything else.
- The need for youngsters to meet at school and socialize.
- A suitable number of teachers categorically rejects the use of computer assisted teaching. Instead, they prefer to deliver classes on-site.

9. RECOMMENDATIONS & CONCLUSION

During this paper, we have tried to shed light on some key factors that are closely related to online-learning Vs on-site schooling without forgetting, in the process, to mention the notion of hybridization as a blend of the two teaching and learning methods and strategies. In the concluding section of this paper, we will try to put forward some recommendations related to hybridization in education before proceeding to the conclusion.

9.1. Recommendations

- Hybrid education can be academically motivating if learners perceive it positively.
- A proportional balance between physical classes and distance learning should be stricken.
- Youngsters’ attitudes towards online classes should be illuminated and even clearly modified.
- Hybridization in education should not be perceived in a nihilistic way by both teachers and learners. It should be viewed, instead, as an indivisible constituent of the students’ cognitive development.
- Flawless technical tools and equipment should be made available for both learners and teachers to ensure the continuity of a decent teaching and learning milieu.

⁹ Arora, S., Chaudhary, P., & Singh, R. K. (2020). Impact of coronavirus and online exam anxiety on self-efficacy: the moderating role of coping strategy. *Interactive Technology and Smart Education*.

9.2. Conclusion

The present paper has aimed to investigate how the pandemic, universally known as Covid 19, has disordered, disfigured, impacted, and even transformed the globe in more than one way. The paper has also highlighted how online learning has intensified some learners' stress and anxiety because of the high number of hours making them compelled to sit in front of their laptops. During the selfsame paper, we have tried to present some mixed attitudes regarding online learning and hybridization evoking, in the process, parental responsibility without excluding the learners' accountability. Opportunities and limitations connected to hybridization in education have also been briefly tackled. Some of the educational specialists have been evoked to back up some of the arguments put forward within this paper. The study has put forward, and enumerated, some recommendations that should be taken into account so that the learning process could be upgraded.

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BASIC STAGES OF DIGITAL TRANSFORMATION

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ABSTRACT

The aim of this paper is to analyse the processes of digital transformation according to the stages of development in the business process. The process begins with the digitization of individual parts of the business process, which is followed by the digitization of production, and then the phase of digital transformation of the entire production process is entered. The research includes an analysis of the time component of the digital transformation of individual industries and the distribution of the degree of digital transformation according to the level of technological development of the organization's environment. Research and analysis also include the fundamental processes of digital transformation within individual business processes. The final results of the research indicate the need to analyse each individual production process in the context of technology development in order to find adequate models adapted to the technological capabilities of organizations in the existing technological environment. Research and analysis are the basis for further research into the digital transformation process at the level of industries and individual organizations.

Keywords: digitization, digitalization, digital optimisation, digital transformation

1. INTRODUCTION

Gagre (2018) calls the process of business transformation in the context of the introduction of digital technology into everyday business "Digital Journey", i.e. he interprets it as a journey that an organization embarks on when it takes the first steps in the digitization of an individual production process. Digitization is the initial stage of changing the business process management model, and ends with the entire digital transformation of the production of goods and services. The initial stages of digitization and digital transformation are associated with the middle of the last century, that is, the development of the first technological solutions in the field of computerization and the development of cybernetics. In its original form, digitization emerged as a technology development that accelerated existing production processes. In addition, the possibilities of savings in production processes were recognized very quickly, which directly influenced the effects of cost optimization. Digitization and digital optimization laid solid foundations for the digital transformation of all industrial production processes. However, what Kane et.al. (2015) point out that managerial strategies are the basis of the digital transformation of production, not new technological solutions in the production and distribution of goods and services. Digital transformation is not necessarily about digital technology, but about the fact that technology, which is digital, allows people to solve their traditional problems. And they prefer this digital solution to the old solution (Patel 2019).

2. FROM DIGITIZATION TO DIGITAL TRANSFORMATION

Digitization is the process of converting something into digital form. The first known use of the term digitization was in 1954 (Merriam-Webster Glossary). Digitization is the process of changing analog to digital form, also known as digital training. In other words, digitization takes an analog process and changes it to digital form without any other changes in the process itself (Dictionary.com). Digitization is the oldest term that has appeared. Although it is not entirely clear how to distinguish it from the concept of digitization in linguistic terms. But in the context of a business process, that term is much clearer. Digitization refers to the simplified transfer of content from analog to digital recording. The concept of digitization appeared in the middle of the last century, as did the development of the first computers. Digital binary technology made it possible to convert paper records into digital content. Some theorists associate the emergence of computer technology in the middle of the last century with the Third Industrial Revolution. Although opinions are divided on this issue. If we look at it in the context of digitalization, we cannot speak of a "revolution" because the basic production process continued to follow the rules that emerged after the Second Industrial Revolution. Digitization has just made it possible to improve the process. Digitization is essentially about taking analog information and encoding it into zeros and ones so that computers can store, process, and transmit such information (Bloomberg 2018). Digitization means converting a process into a digital format that could reproduce the process as it is (AS IS) or could improve what is already being done to include some process optimization. Often companies state that they are digitized (implied as "Digitalization") justifying that they have reduced or eliminated almost 100% of paper[...] (Robledo 2017). Digitization is the creation of a digital (bits and bytes) version of information originally in analog/physical form (paper documents, images, sounds, etc.), so that it can be used by a computer system for processing, storage, and sharing (Garge 2018). We can conclude that the concept of digitization is exclusively related to the technological process of converting analog into digital content.

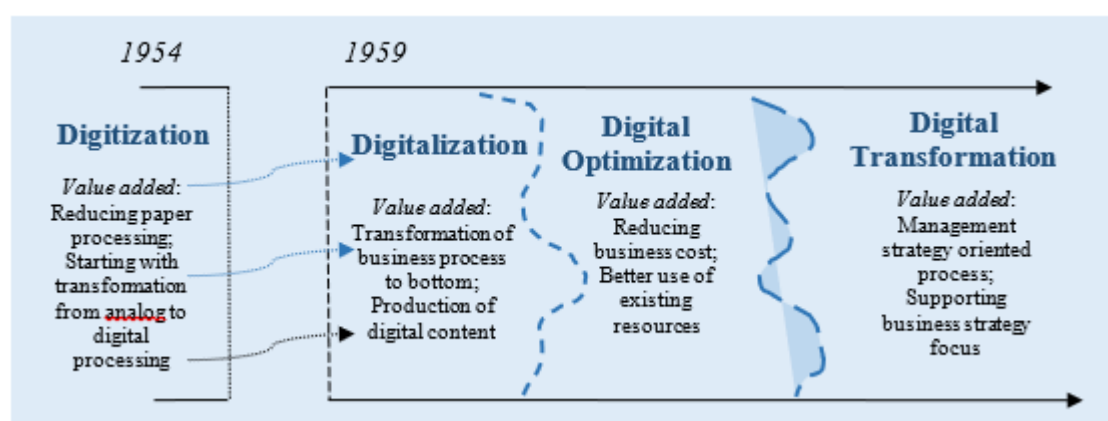


Figure 1: Evolution of digital transformation

Source: Lozić, 2019.

Digitization refers to the digits '0' and '1', i.e. to the signal or data that is called digitized or digitized. Digitization or ultimately digitization is a process that converts information into numbers '0' and '1', which computers used to store, process and transmit information (Boratyńska 2019). Digitization is also called the change of analog tasks to digital operations or can be conceptualized as the integration of IT to facilitate existing tasks, and more generally, as the driver or development of cost-effective configurations of resources that use IT (Verhoef et al. 2019; Khanra, Dhir & Mäntymäki 2020). Digitization defines the process of converting information from analog to digital, which can result in changes in the existing business model

to provide value to stakeholders (Heilig et.al. 2017; Boratyńska 2019). The term digitization differs from the term digitalization precisely in the way of using technology in the business process. For business, the only reasonable response to persistent digitization is digitalization. "Digitalization" or "digitalization" can be defined as "the use of digital technology to change the business model and provide new revenue and value creation opportunities; it is the process of transitioning to digital business (Schreckling, Steiger 2017). Digitization refers to the socio-technical method of adopting digitization techniques to improve social and institutional contexts (Seth et al. 2020). Therefore, digitization has not only focused on cost savings, but also includes developing processes that improve citizen experiences (Verhoef et. al. 2019). While digitalization refers to the technical use and digitization of content, the term digitalisation means a change in the business paradigm and fully relies on the use of digital production models. In this context, digitization implies the comprehensive use of digital technology on all physical products. The production of consumer goods, on the one hand, uses digital technology in production, and on the other side is itself equipped with digital content. The entire process has been digitized. The period that has passed since the term digitization and full digitization in Figure 1 has remained open.

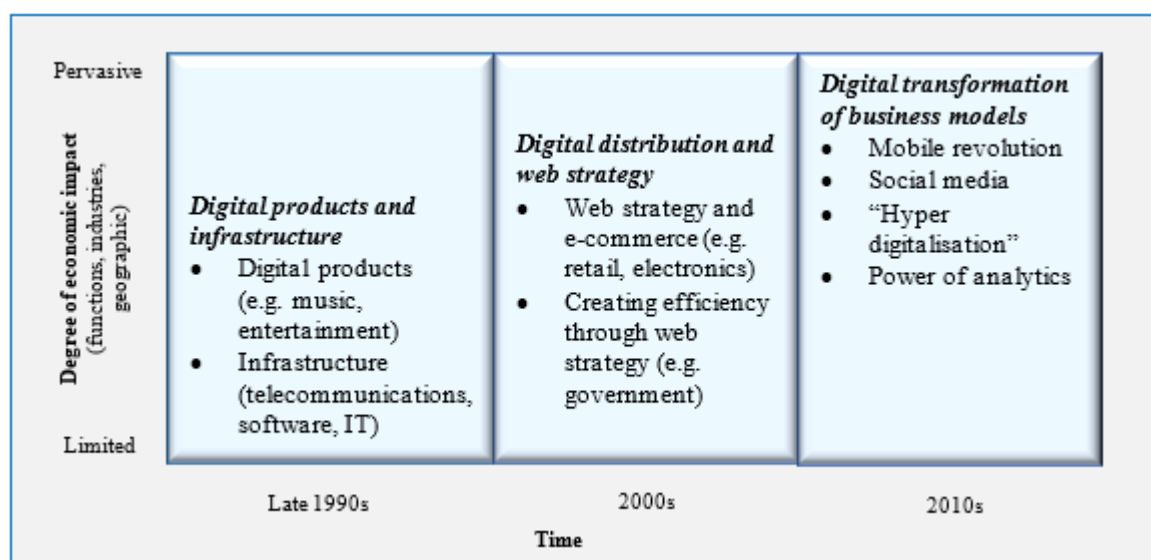


Figure 2: Evolution of digital transformation
 Source: Berman, Bell; IBM Global Business Services, 2011.

The transition from a business process defined as digitalization into a model that optimizes production mode is determined by digital optimization. IT Glossary defines digital optimization as process of using digital technology to improve existing operating processes and business models. Once digitalized, the next thing to look for is the insights from digital information across silos and figure out whether any of the existing processes can be simplified, enhanced, automated, made faster by use of digital technologies, i.e., can the current 'processes and operations' be transformed. You are still not changing the business model, but rather optimizing yourself (Gagre 2018). Digital optimization is the process of using digital technology to improve existing operating processes and business models (Patel 2019). Digital optimization implies improving the process to a higher level and stabilizing the process in the context of digital optimization (Lozić, Fotova Čiković 2024). First, digital optimization is like grabbing the lowest-hanging fruit on the technological tree. It keeps you even with your competition, but it will never advance you past them. Second, it means you're focusing more on your company than you are on your customer, and that will never cut it in today's marketplace (Newman 2019).

Digital optimization implies orchestrating the existing process in the direction of lowering costs and increasing production efficiency. It is aimed at building competitive advantages within an existing industry or ecosystem in a short period of time. Depending on the position of competitors in the industry or the position of competitive ecosystems, digital optimization can lead to fundamental changes in technology, culture, operations and value delivery. That the best leverage would also be used to create a competitive advantage in medium-term plans (Lozić 2019). The process of transition from digitization to digitalization is based on the existing technological level. Digitalization refers to a new management paradigm within existing technological solutions. In this context, digital optimization refers to system alignment with the already existing management model and management mode. The transition from digitization to digitalization is almost open. Switching from digitization to digital optimization already implies overcoming barriers within management tools. The advent of digital optimization into digital transformation implies a complete change in management practice. Digital transformation is a process that harmonizes three fundamental components of change, namely digital technologies, people and data (Bokolo 2017). In Figure 1, the transition from digital optimization to digital transformation is shown as a firm barrier to overcome.

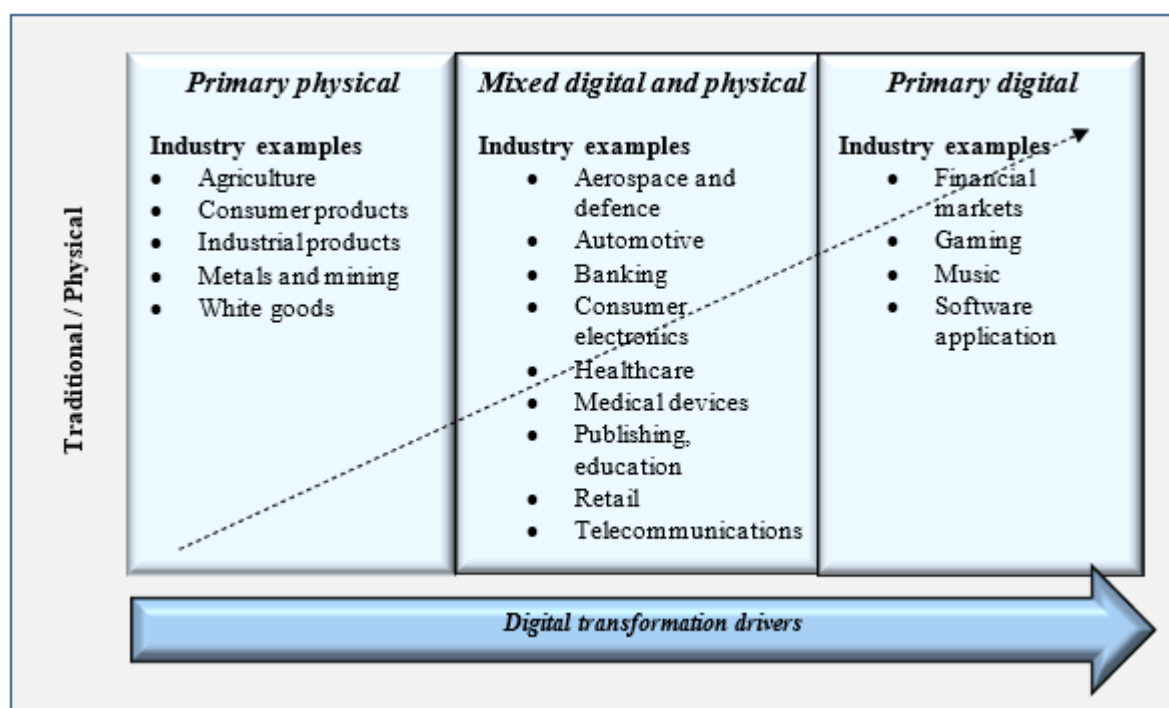


Figure 3: Degree of product and service digitalization
 Source: Berman, Bell; IBM Global Business Services, 2011.

Digital transformation implies focus on the future and solutions beyond control of existing digital optimization. Artegic glossary defines digital transformation as increasing interlinking of all economic areas and with it all measures which are taken to adapt to a digitalised world, especially digital customers and markets. Digital transformation is process of creating completely new business model, and what is more important, new strategic new model of acquiring market and achieve profit zone. Digital transformation is the process of using digital technologies to create new – or modify existing – business processes, culture, and customer experience to meet changing business and market requirements (Salesforce 2018). Digital transformation is the process of integrating digital technology into all aspects of business, requiring emerging technologies and their rapid expansion into human activities, a business must reinvent itself by radically transforming all of its processes and models (Hpe).

Digital business transformation is the process of exploiting digital technologies and supporting capabilities to create a robust new digital business model (Gartner glossary). The terms digitization and digital transformation are synonymous for many executives. The problem is that even the providers often make an unclear definition of the terms and it degenerates into a buzzword, which is simply misused for marketing (Talin 2019). Digital transformation refers to the necessary transformations that drive digitization based on digital policy (Bertola, Teunissen 2018). The concept of digital transformation can be divided into two basic categories: a) technical systems (advanced digital technologies such as cloud computing, the Internet of Things, digital platforms, big data and analytics) (people, culture, goals, procedures and structures) (Gilchrist 2016) and b) social systems (people, culture, goals, procedures and structures) (Davis et al. 2014). Organizations are complex systems consisting of interconnected and networked components, and designing and implementing changes in one system, without analysing the effects on the entire system, will limit the effect of the changes (Davis et al. 2014).

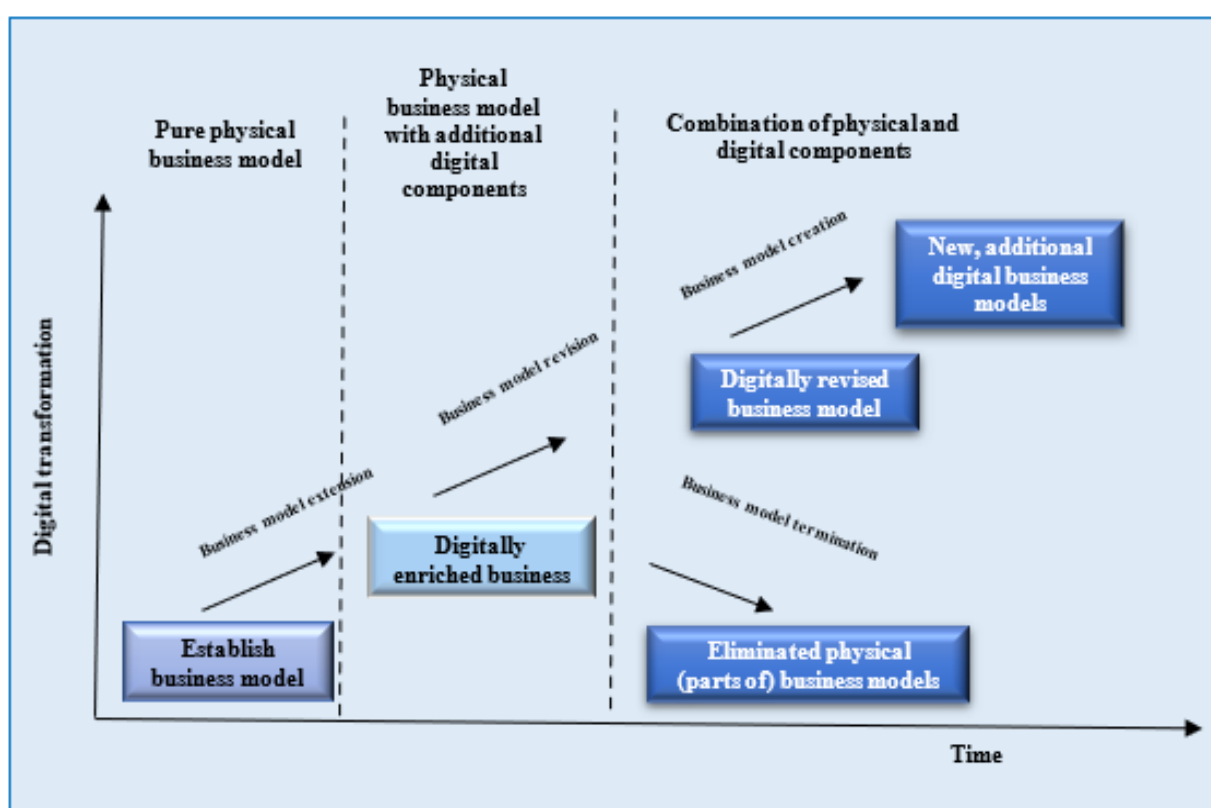


Figure 4: Developing path of business model changes
 Source: Hanelt et.al., 2015.

The process of digitization and digital transformation takes place in stages and did not affect all industries simultaneously. In the late 1990s, digitization was most significant in the telecommunications industries, the development of new types of software, and this stimulated the rapid development of the IT industry. The first of the "old" industries, which accepted the changes, was the media industry, i.e. the industries of entertainment, music, publishing and the like. The 2000s were marked by the development of the Web 2.0 model, which enabled the development of web strategies, online sales, digital retail models, various forms of entertainment industries, and the like. The 2010s marked the final process of digital transformation and the use of strategies related to big-data analytics, IoT, Social Media, etc. The development of the phases is shown in Figure 2.

Analysing the development of digital transformation over time, Berman and Bell (2011) emphasize that not all industries started from the same positions and with the same possibilities of developing digitized solutions in business models. Figure 3 shows the distribution of the three basic forms of digital transformation development in individual industries. Industries are divided into: primary physical, mixed digital and physical and primary digital system. This division emphasizes how some industries, such as gaming, music or software, had the foundations already laid for the development of digital business transformation, while classic industries such as agriculture or industrial products had to build the foundations for the development of digital business transformation. Some industries have been completely digitally transformed, so they are often referred to as digital natives, even though they already existed as classic industries in the pipeline model. The dating industry is one of the industries that has taken the lead in this, and platforms such as Tinder (Lozić 2021) or OnlyFans (Lozić 2023) have become unicorns in a very short period of existence, all thanks to the use of the effects of digital business transformation. Classic industrial branches, i.e. Primary physical, first had to create managerial strategies and make decisions about the speed and direction of development of digitalization of business towards some form of complete digital transformation. Therefore, it is always emphasized that the process of digital transformation is preceded by the development of managerial strategies, and that digital transformation is based on business development strategies, not technological solution development strategies. The strategies of the monetization model in the music industry are an example of the impact of digitization on managerial development strategies within individual industries (Lozić, Čiković 2023). Hanelt et al. (2015) recognize three stages of development of digital business transformation, namely: business model extension, business model revision and business model creation. Within those three phases of development, the business model changes from pure physical to a combination of physical and digital components.

3. DIGITAL TRANSFORMATION AT THE ORGANIZATION LEVEL

At the organizational level, DT includes various changes such as changes in corporate strategy, succession, governance, structure, resources, processes, competencies, culture or leadership (Cennamo et.al. 2020; Hanelt et al. 2020). Successful DT involves the implementation and understanding of technology not only at the individual level but also at the organizational level and in a comprehensive strategy (Mention 2019; Nadkarni, Prügl 2020). More modern studies are focused on the technological aspects of the digital transformation of the organization, in contrast to the initial studies that emphasized the importance of organizational changes in achieving the goals of digital transformation (Duerr et al. 2017). In the processes of digital transformation at the organizational level, Berman and Bell (2011) recognize the combination of two fundamental processes: reshaping the customer value proposition and reshaping the operation model. The processes complement each other and build complementary advantages for the organizations that develop them. On a practical level, one direction of development is based on building new value for the customer, and the other on the transformation of the operational business model. The most successful organizations achieve a balance between these two directions, that is, with the synergy of the directions, they achieve the best result for the organization. The combination of development directions is shown in Figure 5. Which of the directions the organization will develop more, that is, which will be more in the focus of managers in charge of digital business transformation, differs from organization to organization. Likewise, different approaches will be used in different industries as already shown in Figure 3. Reshaping the operating model is based on the question of "how", that is, in what way the organization will optimize business models.

Reshaping the customer value proposition is based on the question "what", that is, what will the organization improve in order to increase the value for users. The organization chooses one of three possible ways of digital transformation (Berman, Bell 2011):

- Path 1 – Create and integrate digital operations first. Then address the customer value proposition to achieve full transformation.
- Path 2 – Enhance, extend or reshape the customer value proposition with digital content, insight and engagement. Then focus on integrating digital operations.
- Path 3 – Build a new set of capabilities around the transformed customer value propositions and operating model lock-step.

Reshaping the operative model begins with the creation of the organization's digital identity and the development of digital distribution models directly related to the digital identity. After that, the organization uses the effects of information collection and processing to optimize business processes. Leverage by using information across channels and organizational structures, while optimizing capabilities within each element. The process ends with the integration of the developed physical and digital elements in the process of developing production processes.

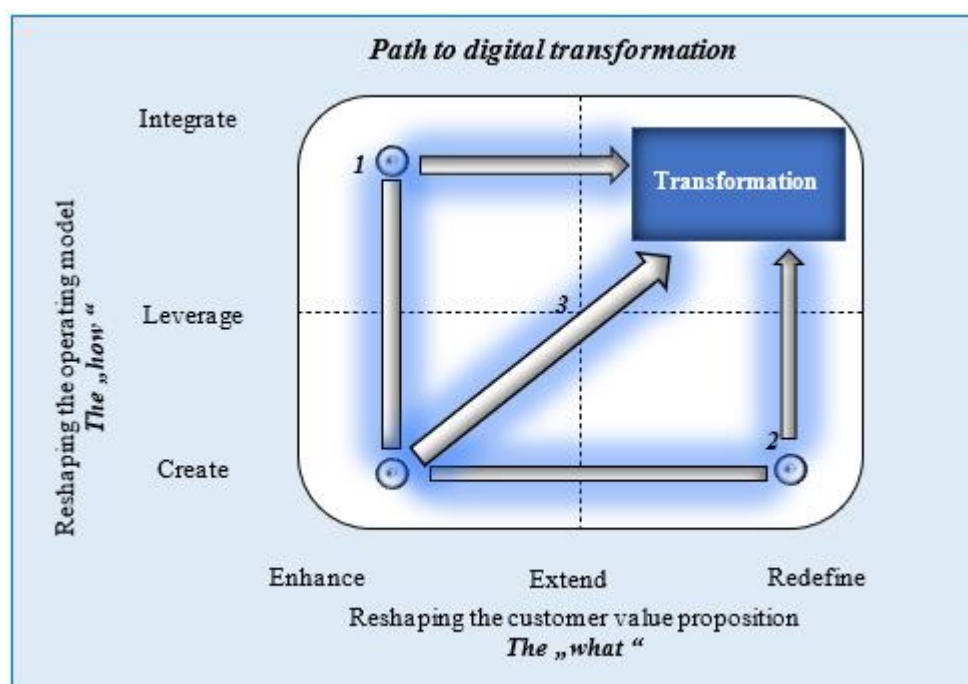


Figure 5: Digital transformation strategy development of value proposition
 Source: Berman, Bell; IBM Global Business Services, 2011.

Reshaping the customer value starts with enhancement of physical product or service with some kind of digital content. That content implies various forms of entertainment, insight or customer engagement. After that, the organization tries to extend the classical physical product with digital content in order to increase the total revenues. The process approaches its full strength at the moment when the organization begins the digital transformation of part of its core activities. In Figure 3, these are the industries in the Mixed physical and digital category that are transforming production models from a classic form to a digital form. Fully reshaping the operating model requires optimizing the value chain around points of customer engagement (Berman, Bell 2011).

Unlike organizational transformation enabled by IT, digital transformation transcends organizational boundaries (Nadkarni, Prügl 2020). Digital transformation redefines the existing business models of the organization, and may even imply the development of new organizational identities (Wessel et al. 2020). Moreover, digital transformation is expected to have both positive and negative implications that go beyond the immediate task of the organization and affect individuals inside and outside the company, along with organizational business models, platforms and ecosystems, and entire industries (Autio et al. 2018; Vial 2019).

4. DIGITAL TRANSFORMATION AT THE TECHNOLOGICAL LEVEL

The history of industrial revolutions has clearly shown that every transformation of the business system is not a digital transformation of business. Therefore, the digital transformation of business needs to be set in a clearly defined framework. Fundamental changes in digital transformation take place within organizational processes, but the level and strength of the transformation always corresponds to the technological environment of the organization and the level of technology development in certain industries. The processes of digital transformation of business processes begin with digitization processes that appeared in the middle of the last century. While the Fourth Industrial Revolution is about digital transformation, industrial revolutions in general are not digital transformation. Industrial revolutions include the emergence of new production paradigms based on technological development (Abiodun et al. 2022). The development of the phases of business transformation that will result in the digital transformation of industries is shown in Figure 6.

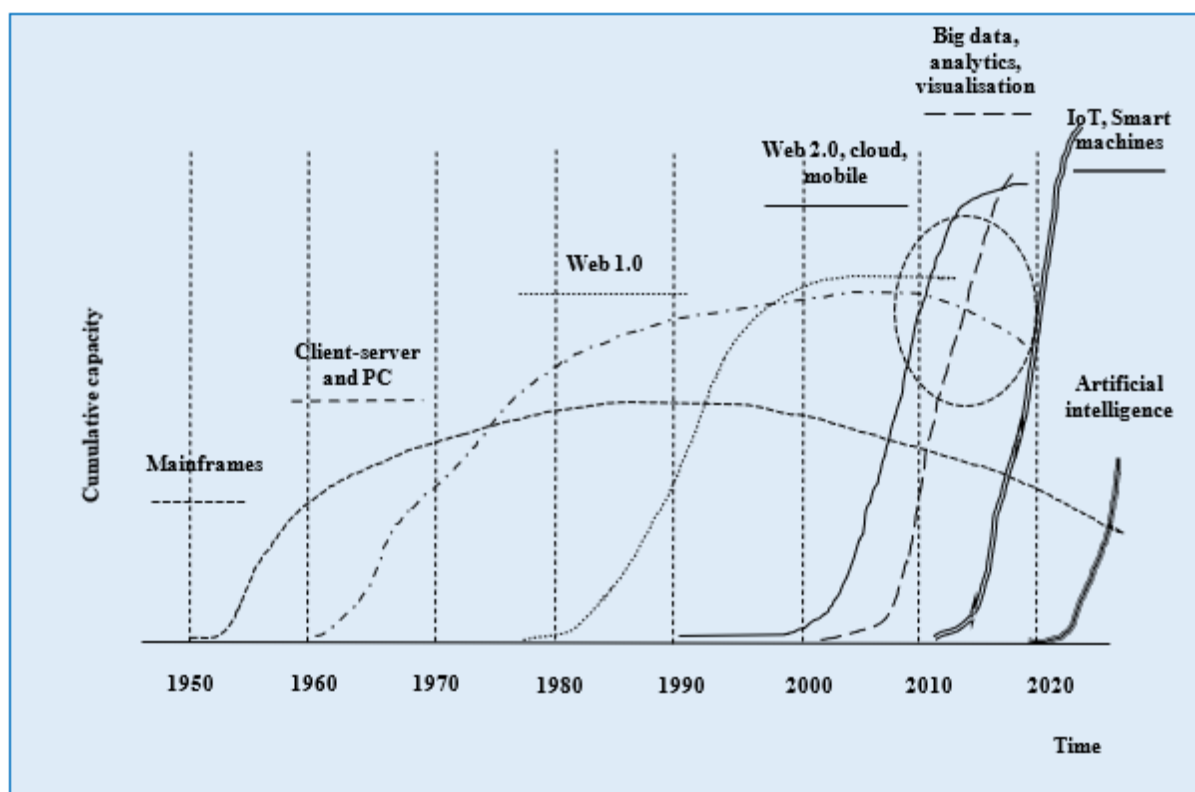


Figure 6: The combinatorial effects of technology are accelerating change
 Source: World Economic Forum 2017.

Initial forms of digitization are associated with mass production, mass media and classical mass markets. This is the period of late modernity, i.e. the second half of the twentieth century, dominated by mass production, mass advertising and supply side economy based on the economy of scale model.

The first major step towards digitization of production processes, at the level of technology in the organization's environment, is connected with the development of the Internet, i.e. the web 1.0 model. However, web 1.0 is just another tool in the model of mass production and economies of scale, as it supports classic mass industry and mass advertising. The communication model is one-way, and classic marketing and advertising models have been retained. Web 2.0 significantly changes the model of communication, and the untouchable model of mass production of standardized products is slowly giving way. What started with "Fordism" disappears under the influence of the development of postmodern society. Research results of Imran et.al. (2021) showed that the largest number of respondents recognize digital transformation as the basis for changes in social and organizational cultures, and some respondents emphasize the importance of the flexibility brought by digital transformation in relation to the standardization that was established in industrial societies after the industrial revolutions. Web 2.0 will lay the foundations for the digitization of production processes, and the development of technology after the 2000s will enable a complete digital transformation. As shown in Figure 6, published by the World Economic Forum 2017, the digital transformation will partly develop on the basis of the Web 2.0 model, as well as the development of mobile devices, smartphones, cloud technology, etc., and only after that will the real an exponential rise. The development of cloud technology will lay the foundations for models of big-data analytics, visualization, etc. Industry 4.0 will enable the development of IoT, smart machines, deep learning, and all this is an introduction to artificial intelligence models. Cheaper and better technology is creating a more connected world: 8 billion devices are now connected to the internet; by 2030, that number is forecast to grow to 1 trillion. As the cost of advanced technologies continues to fall, new applications will be opened for them, as well as opportunities to combine them in innovative ways. This unleashes "combinatorial" effects, where the capabilities of technologies working in tandem far exceed their capabilities when deployed separately (World Economic Forum 2017). The digital transformation of the organization is based on the resources that the organization owns and wants to develop, which partly coincides with the resource-based theory, but must always correspond to the development of technological solutions in the organization's environment in the industry in which the organization competes. The theory of dynamic capabilities is related to the theory 61 of the Resource Based View (RBV) for the firm. According to RBV, an organization should identify and use resources that are valuable, rare, difficult to copy and non-substitutable to gain competitive advantage and generate abnormal profits (Abiodun et.al. 2022). Digital transformation is directly correlated with geopolitical relations. The geopolitical level is reflected in terms of sociotechnical systems on governance research as part of sociotechnical regimes and environments (Geels 2002). In this context, sociotechnical developments are seen as broad business environments, while the sociotechnical regime consists of a set of institutions and rules that establish the boundaries of the ecosystem (Brem, Radziwon 2017). In the past, cultural differences that distinguished landscapes and regimes stood out in the first place. Today, data perception (Lee 2018), intellectual property rights and geopolitical strategies have become conditions for the use of digital technologies and data (Brem, Nylund, 2021).

5. CONCLUSION

Digital transformation is a continuous process aimed at changing the paradigm of the production process within organizations. The transformation of production processes began in the middle of the last century with the advent of system digitization, i.e. process changes and small and isolated production cycles. With the further development of cybernetic systems, the process of digitization suddenly takes on a wider application and reaches its peak with the development of the Internet in the 1990s.

The digitization of production activities has particularly affected industries that were able to very quickly transfer their business operations to digital platforms, that is, use the Internet as a distribution channel. First of all, it affected media industries such as the music industry and publishing. The first forms of digitization threatened long-term negative consequences for these industries, as platforms such as Netscape and others enabled piracy and the revenues of traditional publishers plummeted. With the development of new technological solutions, primarily the streaming industry, the decline in income was stopped, piracy was stopped, and the media industry once again experienced some form of renaissance. Digitization is directly related to the web 1.0 model, which enabled the distribution of goods and services on the Internet, but the communication and distribution model remained the same as in classic pipeline industries. Only the development of the web 2.0 model in the 2000s laid the foundations for a complete digital transformation of the business paradigm. Cloud business technologies and "big-data analytics" preceded modern forms of technology use in the digital transformation of business. Classic industrial branches went through processes of digital business transformation from the beginning, completely changing the existing business paradigms. Corporations created after the 2000s, i.e. digital native corporations, built their business activities as digitally transformed corporations from the very beginning of their operations.

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IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGY IN MANAGERIAL ACCOUNTING

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ABSTRACT

The article analyses the impact of modern technologies on managerial accounting with special reference to the blockchain technology, where it is determined that this technology should contribute to greater efficiency and accuracy in financial reporting of various business entities around the world. The transformation of managerial accounting enables better data integration and improved quality of information, which is crucial for strategic decision-making in the companies. Technology enables better integration of information from different sources, which further improves the accuracy and reliability of financial statements. Accordingly, the implementation of blockchain technology in managerial accounting primarily ensures transparency and security of data necessary for financial reporting. The application of new technologies in managerial accounting, such as blockchain technology, will not only lead to automation and improvement of existing business processes, but it will also redefine the roles of employees within the very companies, which will contribute to better overall business efficiency and decision-making process. There are still many practical and formal obstacles on this path, such as the application of appropriate business models, an acceptable legal framework and fair tax treatment. However, it is certain that in the future these types of problems will be overcome.

Keywords: *Managerial Accounting, Financial Reporting, Blockchain Technology, Automatization, Decision-Making Process*

1. INTRODUCTION

In the modern business environment, rapid development of technology and digitalization bring significant changes in the way companies operate and make strategic decisions. Managerial accounting, as a key tool for providing information to the management, is also undergoing a transformation under the influence of new technologies. This article deals with the analysis of modern technologies' impact on managerial accounting with special reference to the *blockchain* technology and explores the advantages and challenges this technology brings in the context of financial reporting and business decision-making. For achieving a competitive advantage on the market, the companies must be able to quickly adapt to new technological trends and innovations. The transformation of managerial accounting in the digital age is taking place on several key levels. The application of new technologies enables better integration of information from different sources, thereby improving the accuracy and reliability of financial statements.

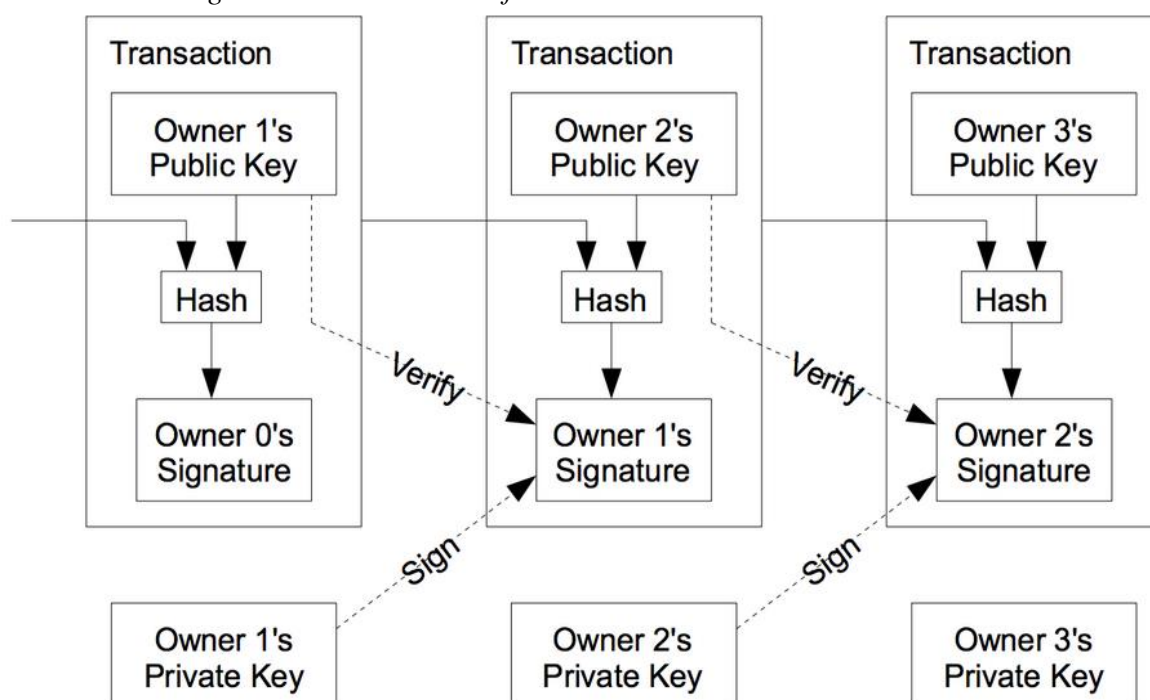
For example, the *blockchain* technology can ensure data transparency and security, while AI and machine learning can provide better forecasting and data analysis. This further improves the quality of information based on which managers make decisions, resulting in better business results. Technological transformation of managerial accounting also implies changes in the role of accountants and financial experts within a business organization. As technology takes on routine and repetitive tasks, the role of accountants and financial experts is increasingly directed towards strategic planning, data analysis, interpreting financial statements and advising the management in decision-making. This requires accounting experts to develop new skills, such as analytical skills, critical thinking, and communication, in order to successfully cope with the challenges of digital transformation. This article will analyse current application of *blockchain* technology in managerial accounting and explore the advantages and challenges that this new technology brings in financial reporting. Accordingly, the main goal of this article is to provide a comprehensive overview and analysis of *blockchain* technology and its impact on managerial accounting, exploring the advantages, challenges, and possible implications for all business entities.

2. OVERVIEW OF BLOCKCHAIN TECHNOLOGY LITERATURE

Blockchain technology, originally developed as the basis of cryptocurrencies like Bitcoin, is increasingly finding its application in managerial accounting. This technology offers an innovative approach to transaction records and data management, which has significant implications for managerial accounting. Key features of *blockchain*, such as decentralization, transparency, and invariability, make possible the creation of a reliable and secure system for recording financial transactions. In managerial accounting, *blockchain* can help automate processes, reduce chances for errors and fraud, and improve the efficiency and accuracy of financial statements. Satoshi Nakamoto is considered to have presented a solution to the problems associated with the application and use of digital currency, particularly in relation to the double-spending problem (Tschorsch and Scheuermann, 2016). Although Nakamoto's true identity remains unknown, it is known that he was involved in the Bitcoin project until 2010, when he withdrew and left the project to the community for further development (Tschorsch and Scheuermann, 2016). One has proposed a system that uses the P2P distributed timestamp server to create the computational proof of chronological sequences of transactions. An electronic coin is defined as a series of interconnected digital signatures. Each transaction is defined as a set of digitally signed *hash* of the previous transaction and public key of the next owner. As illustrated in Figure 1, the private key is used to sign the transaction and the public key is used to verify it. The public key is stored in a wallet, which can be a software, hardware, or web-based service (Nakamoto, 2008).

Figure following on the next page

Figure 1: The structure of transactions in the Bitcoin blockchain



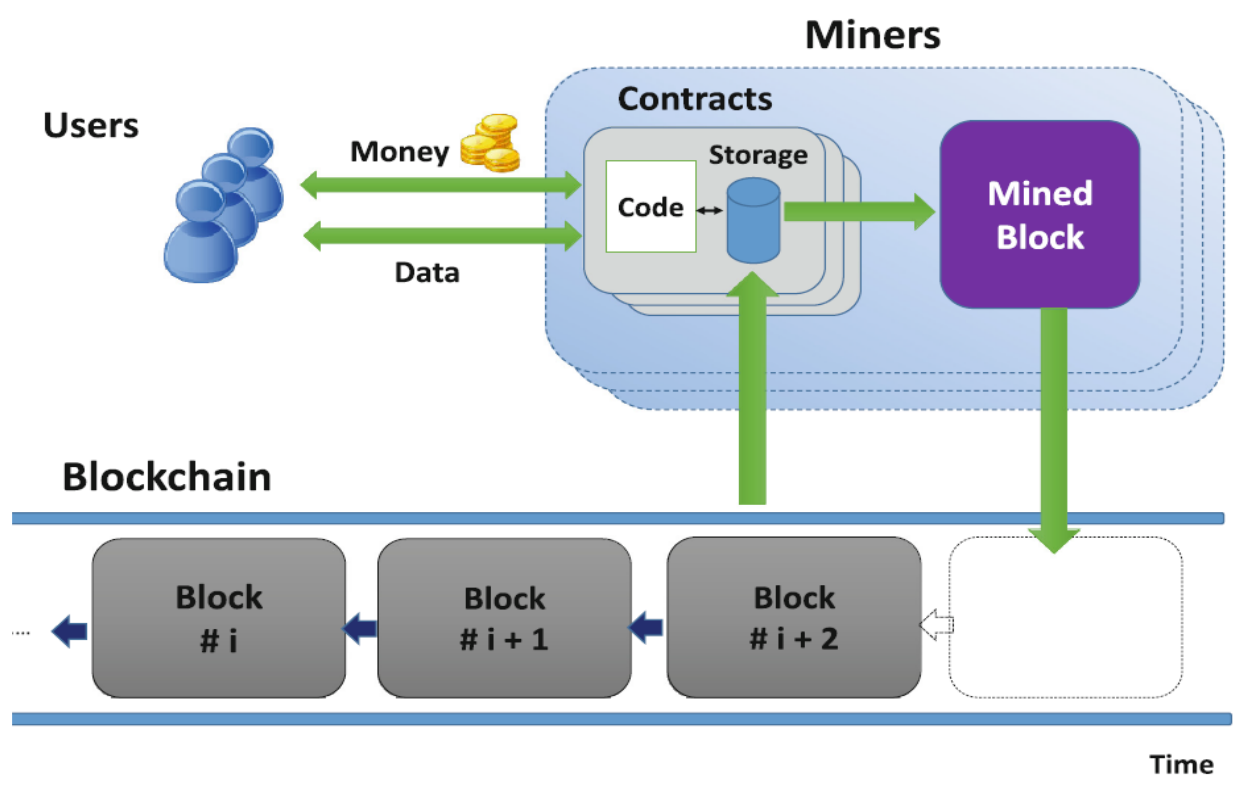
Source: Nakamoto, 2008

Bitcoin ledger is described as a state transition system that encompasses the current state, indicating the ownership of all Bitcoins, and the state transition function through transactions. This function results in creation of a new state. If the sender has enough Bitcoins to complete the transaction, the process leads to a change in the ownership status of both the sender and the recipient. Otherwise, the process is considered unsuccessful. Since the Bitcoin inception in 2009, numerous blockchain architectures have been developed to meet various technical, business, and legal requirements. Due to the complex dynamics of the development of *blockchain* architectures, the display of all existing technologies so far would be neither complete nor comprehensive. The distributed nature of the Bitcoin network requires the cooperation of unreliable participants to reach consensus. Using the transaction history, which allows the users to determine ownership, or rules defining the allowed transactions, the number of Bitcoins in a block reward, the difficulty of mining, and the like, is essential for reaching consensus in the *blockchain* (Aste et al., 2017). Decentralized consensus manages main ledger updates without the need for a central point of integration or supervision, entrusting local nodes with independent verification of transactions and adding them to the chain with the highest cumulative computing power (Aste et al., 2017). The system allows records to be audited by the predetermined group of participants, with different degrees of openness. For example, in public *blockchains*, everyone with internet access has equal rights and possibilities to access the ledger, making thus the records transparent and easily traceable. Network participants can update the ledger by using their individual rights, which can be weighted based on, for example, the computing power of their CPUs. They can also decide to combine their individual weighted rights (Aste et al., 2017). *Blockchains* are distributed, replicative ledgers that use one-way cryptographic *hash* functions to ensure the irreversibility and immutability of records. Security in *blockchains* is considered a relative concept, but they are safe because users can transfer data only by using the private key (Aste et al., 2017). Private keys are used to create digital signatures for each transaction a user sends to the *blockchain*, and signatures serve to verify the authenticity of transaction and prevent it from being modified after the issuance. *Blockchain* is based on the principles of irrefutability and immutability of records.

Data recorded in *the blockchain* become immutable, because once recorded, they cannot be modified without notifying the entire network. The use of *hash* functions preserves this immutability, because even minor changes in input data result in unpredictable changes in *hash* values. Each block includes the *hash* of the previous block, creating thus a chain of blocks, whose strength of immutability is proportional to the difficulty of modifying the transaction history. Unauthorized changes to the ledger become extremely difficult, except in cases where an individual or group controls the majority of "votes" in the network. The costs of implementing "51 percent attack" on public *blockchains*, such as Bitcoin, are associated with this immutability (Aste et al., 2017). Private *blockchains* use a different mechanism for adding blocks, where the *blockchain* validity and acceptance depend on signatures of the defined set of participants, instead of the expensive *Proof-of-Work* mechanism (Barber et al., 2012). In this case, re-creating the chain requires knowing other participants' private keys. Although technically immutable, *blockchains* have shown some flexibility in governance in practice, with examples of the Bitcoin community invalidating blocks in response to the previous community decisions. The differences between Ethereum and Ethereum Classic and Bitcoin, Bitcoin Cash and Bitcoin Gold indicate the importance of informal governing bodies for the information stored in the *blockchain* (Barber et al., 2012). *Blockchains* are usually classified into two categories: with permission and without permission (Atlam and Wills, 2019). In blockchains with permission, access is regulated by the organization or *blockchain* owner. Private *blockchains* are completely allowed, where any node that wants to participate must be a member of that organization. Ripple and Hyperledger are examples of private *blockchains* (Singh and Kumar, 2021). Federal or consortium *blockchains* are similar to private blockchains, but with a limited group of users. They are defined as synchronized distributed databases that monitor data exchange among the members of consortium. Examples include EWF, R3, Quorum, and Hyperledger (Singh and Kumar, 2021). Compared to the public *blockchain*, private *blockchains* are more efficient due to fewer users, which requires less processing power and time to verify new blocks (Atlam and Wills, 2019). *Blockchains* without permission are open and accessible to everyone. Public *blockchains* such as Bitcoin, Ethereum, and others, are examples of *blockchains* without permission, where the validity of transactions is based on consensus among network members (Singh and Kumar, 2021). Public *blockchains* are difficult to hack due to the demanding mechanisms involved in adding new blocks. This procedure usually involves complex solving of computer puzzles (such as with the *Proof-of-Work* mechanism) or cryptocurrency investing (such as with the *Proof-of-Stake* mechanism). Each transaction in a public *blockchain* is usually subject to a certain processing fee, which further contributes to the network security and sustainability (Singh and Kumar, 2021). The term "smart contract" was introduced by Nick Szabo in 1997. Smart contracts combine computer protocols with user agreements to execute certain terms of a contract. They function as standalone contracts embedded in the computer code and are managed via *blockchain*. These contracts are executed automatically, without the need for third-party mediation, thanks to computer protocols that ensure reliable execution of transactions (Zhu et al., 2019). Smart contracts are the key component of many *blockchain* applications, especially in Ethereum, where they allow the creation of decentralized applications that can automatically perform complex operations based on the predefined conditions.

Figure following on the next page

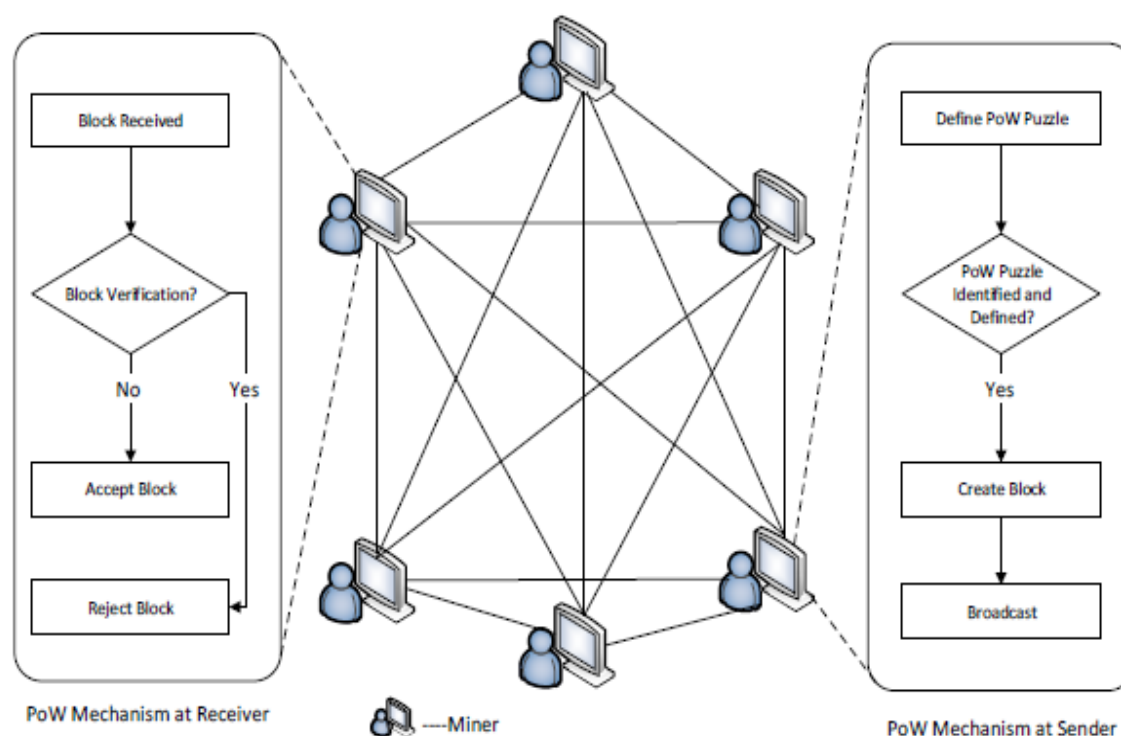
Figure 2: Structure of a distributed cryptocurrency system with smart contracts



Source: Delmolino et al., 2016

Transactions made through smart contracts are irreversible. The basic structure of a smart contract consists of the following components: lines of program code, storage file and account balance. A smart contract can be created by any node in the *blockchain* to initiate a transaction. Once created, lines of code in a smart contract become immutable and can no longer be modified after the initial setup (Zhu et al., 2019). Figure 2 illustrates a contract storage file associated with a miner and hosted on the public *blockchain*. The mining network is responsible for executing the program logic of a smart contract and reaching consensus on the results of execution. Only a specific node (miner) has the authority to hold, access and modify data within the *blockchain*. In case of a smart contract, it operates on reactive basis, i.e., the contract is activated when it receives a message from the user or another node in the network. During execution, a smart contract can access its storage file for reading and writing operations (Delmolino et al., 2016). Consensus mechanisms are key protocols that ensure synchronization between all nodes in the *blockchain* network. They verify the legitimacy of transactions before adding them to the *blockchain*. These mechanisms are extremely significant for smooth and accurate functioning of *blockchain* technology, ensuring that all nodes use the same *blockchain* and continuously verify all the executed transactions. Today there are many consensus mechanisms, with several dominant ones like *Proof of Work (PoW)*, *Proof of Stake (PoS)*, *Delegated PoS*, *Ripple*, and *Tendermint*. The main difference between these mechanisms lies in the way they verify and validate transactions. Despite the availability of various consensus mechanisms, many leading *blockchain* systems, including Bitcoin and Ethereum, use PoW. PoW was the first and became a very popular consensus mechanism. As per participation in the *blockchain* network, in order to be allowed to add a new block to the chain, the users must prove the work done. In the *blockchain* network, nodes are expected to reach consensus and agree that the block *hash*, delivered by a miner, is valid (Atlam and Wills, 2019).

Figure 3: Operation of consensus mechanism in a blockchain



Source: Ahmad et al., 2019

Figure 3 shows the operation of the Proof of Work (PoW) mechanism within the *blockchain*. In this mechanism, the PoW puzzle is defined and created by miners within the *blockchain*. Once the puzzle is created, it becomes visible and accessible to all other nodes participating in the system. The solution of the PoW puzzle allows a specific node to retain, access, and modify data in the *blockchain*. This process effectively ensures that only a node that manages to solve the puzzle can add a new block to the chain, thereby ensuring the security and integrity of the entire *blockchain* system.

3. BLOCKCHAIN TECHNOLOGY IN MANAGERIAL ACCOUNTING

The nature of *blockchain* as a ledger (record) for Bitcoin transactions inspired the idea of using *blockchain* databases and infrastructure for accounting purposes. Given the said, it means that *blockchain* is actually an accounting system that serves to record, store and disclose data on transactions in Bitcoin. Since *blockchain* can contain currency transactions without third-party mediation, and keeping in mind that the transfer of currency belongs to the most strictly regulated areas of financial relations, *blockchain* can also contain transactions of any type of assets: stocks, bonds, and others. With more and more companies using *blockchain* systems in their transactions, the aggregation of these transactions into financial statements will be possible to make at any time. The first person who coherently described the possibility of *blockchain* accounting by conventional companies was Lazanis (2015). He stressed that if such company voluntarily discloses its transactions on the *blockchain*, the very *blockchain* will eliminate the need of trusting an intermediary, for example a commercial bank or insurance company. Accounting, as we know it, believes too much in the integrity of accountants and auditors. The answer to the question why that is so is because they may be - and sometimes really are - subject to corruptive behaviour.

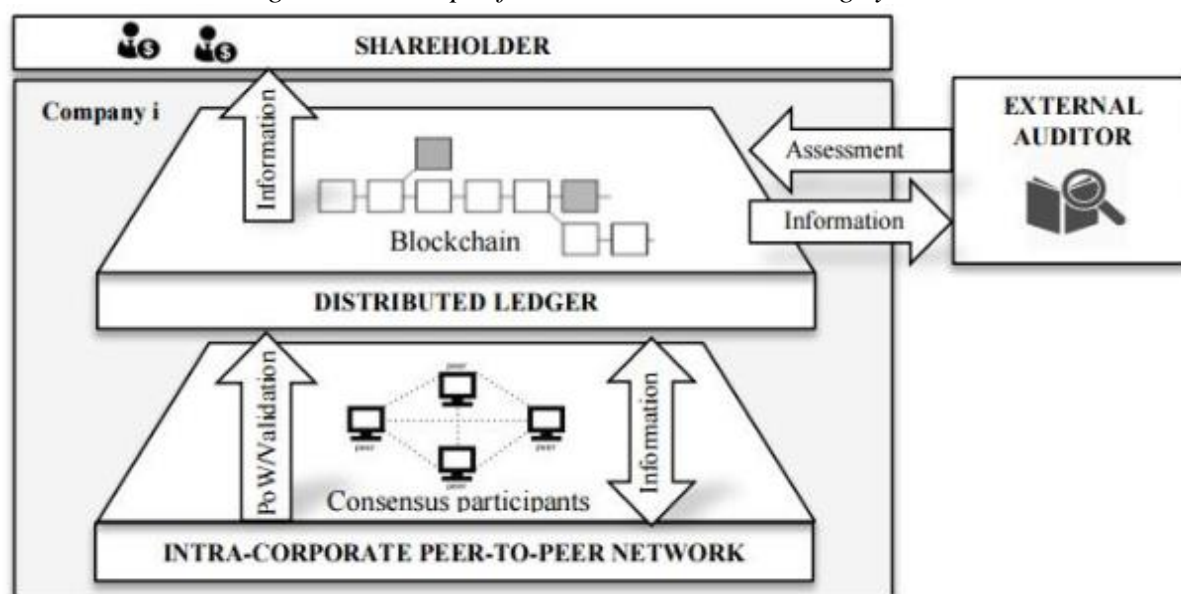
Now, to verify the accounting information and in accordance with various international standards, in order to support the integrity of recorded events, the auditors must obtain sufficient and appropriate evidence – resulting in excessive audit costs. By trying to reduce audit costs for their clients, audit companies are under pressure to work as little as possible and figure out how to actually (un)test the transactions. Yet, in many situations the price of public reliance on false financial information can be higher, as evidenced by the case of Enron - a well-known accounting scandal from the global practice. In the Enron case, the accounting company was found guilty of obstructing justice by destroying key accounting information. Fortunately, under the *blockchain* regime, the users of financial information should not depend on the auditor's judgement about the integrity of financial statements. Instead of that, such users could aggregate timely financial statements with a high degree of certainty and make their own adjustments that are not recorded in cash, for example, the calculation of depreciation and inventory valuation. The *blockchain* real-time accounting system is a software solution that enables transactions of currency, financial securities, derivatives, and other digital documents between two or more parties, stores transaction data in cryptographically protected blocks whose integrity is verified by the mining process and allows the preparation of financial statements at any time. As per the companies and their stakeholders, to get all the advantages provided by such technology, it is imperative that the *blockchain* real-time accounting system has the following properties:

- 1) Transparency - transactions must be visible in real time, as is the case with Bitcoin.
- 2) Immutability - there must be no programming possibility to modify any data once entered, and in order to achieve this the mining power must not be controlled by the company using the system.
- 3) Accessibility - data must be easily accessible to a wide range of stakeholders (Potekhina and Riumkin, 2017).

Bitcoin network is a kind of gold standard in terms of these properties, but private companies using the technology may want to limit access to their accounting information, because high transparency has its price, i.e., it can contain confidential information that can provide an advantage to competitors. As per the competition, the right balance between transparency and data protection has yet to be established (Potekhina and Riumkin, 2017). The term "triple-entry accounting" – described as improvement of conventional double-entry accounting, where the accounting records of the parties involved are cryptographically sealed by a third party (*blockchain*) - is used by certain researchers when explaining the term of blockchain-based accounting. The seller posts a *debit* for the money received and the buyer posts a *credit* for the money spent. However, these entries do not occur in separate ledgers but as a transaction between accounts in the same public ledger, resulting in an interconnected set of accounting records. Having in mind that *blockchain* is immune to any data changes, it is impossible to falsify or delete recorded accounting entries. It is interesting that the term "triple-entry accounting" was first described in 2005, three years before the invention of *blockchain*. Ian Grigg (2005) described the possibility of using a cryptographically protected digital account for checking the transactions that occurred between different parties and are stored by a third party, as well as the possibility to show whether any details in records have been modified or deleted. The inception of *blockchain* opened the possibility of the process becoming automated, cheap, and even more reliable, because decentralized ledger could overcome the need for a third party keeping the accounts in a centralized way. *World Wide Ledger (WWL)*, a term with no strict definition but often used in blockchain-related literature, represents another term used in connection with blockchain accounting is. As Tapscott and Tapscott explain (2016), WWL represents the ultimate implementation of a verified and searchable *blockchain* accounting system, where international corporations disclose all their transactions and make them available

to regulators, managers, and key stakeholders. Transparent WWL should simplify the work of regulators, accountants, and auditors. A graphical representation of the *blockchain* accounting system as proposed by Rückeshäuser (2017) is shown in the Figure 4 below. The system represents a complete *peer-to-peer* network between corporations using *blockchain* accounting in their practices. By doing so, such companies commit to mutual execution of monetary transactions solely through *blockchain* in the form of *tokenized currency* that allows all transactions to be recorded and verified in the network. It is assumed that the system provides full transparency to shareholders and regulators, allowing thus external audit of accounting entries. *Proof of Work* validation means that transactions have been validated through the implied mining process.

Figure 4: Concept of the blockchain accounting system



Source: Rückeshäuser, 2017

The auditor acts as an independent third party confirming the information in the company's financial statements to be accurate. The company's shareholders place their trust to auditors for assessment. Since *blockchain* can make the element of trust unnecessary and automate the process of validating transactions that have occurred in the company's ledgers, one can assume that this will have impact on the auditing profession (Lazanis, 2015). In an interview presented in Don and Alex Tapscott's book "*Blockchain Revolution*" (2016), Eric Piscini, head of Deloitte's cryptocurrency centre, acknowledged the blockchain's ability to considerably affect the business model of audit companies in the future. Currently, auditors must perform a series of procedures to verify the integrity of accounting entries, they can verify business accounts, confirm a sales transaction with a customer and the like (Lazanis, 2015). These procedures result in excessive costs, require a lot of time, and finally do not guarantee that there are no discrepancies in accounting information. Therefore, the main implication of blockchain-based accounting is that in the audit there is a significant reduction in time and costs of performing the audit. Knowing that all transactions recorded in the accounting system have actually occurred and that the amounts listed are correct means that no time was spent on manual verification of accounting entries, whereby the auditors could spend more time solving more important issues like complex transaction entry and internal control mechanisms. Following the said, one could reasonably presume that such technology will reduce the role of auditors and make their work more efficient.

However, complete abolition of the profession can occur only in the distant future. In order to take advantage of the opportunities provided by technology and not to be left out of business in the future, four major global audit companies are developing solutions that will allow them not only to transform and improve their practices but also to maintain their positions by becoming the first *blockchain* software providers on the market.

4. RESEARCH RESULTS AND DISCUSSION

Despite the active development of *blockchain* and creation of great attention around the world, on the way to revolutionizing the financial markets one must still overcome certain problems. The challenges of different business models represent the first problem. Many traditional business models may not be compatible with *blockchain*, and those who can integrate *blockchain* still need to prove their sustainability (Swan, 2015). As opposed to some business models with clear revenue model and relatively simple implementation process, for example *Ripple* - a network providing *blockchain* transactions at the interbank level or *Balanc3* - a pure triple-entry accounting system, more complex applications such as *Decentralized Autonomous Organizations* have very complex business models without empirical evidence of their efficiency. Uncertain legal framework and different regulation in global practice represent another challenge. There are several issues related to the regulation of *blockchain* technology. First of all, given the fact that *blockchain* solutions require some kind of cryptocurrency to work for rewarding the miners or for recording transactions (as a reminder, for accurate tracking of transfers, the transaction cannot be just a record of an external transaction but it must be actually performed in the *blockchain*), the regulatory framework must be adjusted in order to recognize Bitcoin and other cryptocurrencies as legal means of exchange. The first step that will set an example may be the *New York Bitlicense* that applies to all types of virtual currencies, including the *blockchain*-based ones. *Bitlicense* sets requirements for companies using *blockchain*, such as *KYC (Know Your Customer)*. This is particularly important for consumer protection and compliance, since cryptocurrencies often imply pseudonymity (Swan, 2015). In order to regulators fully embrace the *blockchain*, one must develop international treaties aimed at regulating new types of international business and accounting practices arising from the implementation of technology. Since different authorities view *blockchain* in drastically different ways, this can prove to be very difficult. For example, the U.S. Tax Administration (IRS) recognizes Bitcoin as a financial asset and calculates a tax on its valorisation, while China has banned Bitcoin and does not allow banks to exchange or use it as an investment (Tapscott and Tapscott, 2016), and in Sweden, Bitcoin is recognized as a means of payment and requires cryptocurrency exchange services to be registered and in compliance with the same requirements as with other similar financial instruments. The adjustment of tax practices to encompass a *peer-to-peer "sharing economy"* represents another open question. Namely, it will be difficult to keep track of transactions concluded in a pseudonymous way of doing business. Tax authorities already have difficulties in accurate taxation of services such as *Airbnb*, *Uber* and *OpenBazaar* and their users. One has proposed a shift from income-based taxation to a consumption-based variant, which will require a fundamental modification of the current tax system (Swan, 2015). Given all the previously mentioned, not all companies will like the high level of transparency of their records, because their valuable financial information will be disclosed - in real time - to the competition. However, if management, regulators, and key stakeholders are granted only a limited access to data, this could partially solve the problem. Tapscott and Tapscott (2016) argue that privacy is the privilege of individuals, not corporations, and that companies have a responsibility to society to openly and timely disclose all their business. On the other hand, the problem of *blockchain* technology being a potential "job destroyer" is widespread in today's debates.

Blockchain accounting systems are designed with the goal to replace tedious accounting tasks and manual verification of transactions, resulting in complete automation of work currently performed by millions of accounting clerks. Various countries have already recognized this problem. For example, the Australian Ministry of Industry mentioned in its report the profession of accounting clerks as one of the most likely to be replaced by technology in the future. Although the problem may arise only in the relatively distant future, it should already be taken into thoughtful consideration today. In conclusion, today the *blockchain* technology is strongly associated with the most famous cryptocurrency - Bitcoin, meaning that Bitcoin-related scandals can potentially be projected onto *blockchain* as the core technology and slow down its development with occasional redundant regulations and companies' aversion to its use. The largest number of negative events that damaged Bitcoin's reputation stem from its pseudonym characteristic. Even though the transactions to the recipient are easily traceable, it is extremely difficult to identify the person behind one Bitcoin wallet or another. All of this resulted in the creation of services like *Silk Road* - an anonymous marketplace for illegal goods, including stolen credit cards, drugs, and weapons. A strong regulatory framework, particularly requirements of knowing the client, is essential to prevent the illegal use of technology (Swan, 2015). However, there is another view on this matter as some believe that at the later stage in the development of technology, criminals will be discouraged from using it given that the use of cryptocurrencies leaves a permanent trail of illegal transactions as opposed to cash (Tapscott and Tapscott, 2016).

5. CONCLUSION

In the modern business world, the integration of advanced technologies into managerial accounting brings significant changes in the way financial information is managed and in the process of making business decisions. Technologies such as artificial intelligence, machine learning, *blockchain* and others contribute significantly to the efficiency, precision, and strategic depth of accounting processes. These technologies enable the automation of routine tasks, freeing up time and resources for analytical and strategic aspects of business. They also improve the accuracy and reliability of financial statements and enable better forecasting and data analysis. Digitalization of managerial accounting enables faster and more transparent access to information, which is crucial in a fast-paced business environment. It can be concluded that the application of modern technologies in managerial accounting leads to an improvement in the efficiency of business processes and the quality of financial reporting. The implementation of *blockchain* technology leads to significant improvements in accounting reporting processes. This technology enables faster data processing, greater precision in financial reporting and more efficient resource management, resulting in a general improvement in the efficiency of business processes. The introduction of *blockchain* technology into managerial accounting also allows accounting experts to focus on strategic planning, data analysis and management consulting, thereby increasing their role in decision-making within the organization. Global practice so far has shown that with the automation of routine tasks through new technologies, accounting experts get more time and opportunities to focus on more complex and strategically important aspects of business. Their role extends from traditional accounting to involvement in strategic planning and analysis, as well as management consulting, thereby increasing their contribution to decision-making processes. The advantages of this article are primarily reflected in the fact that it analyses new technology that represents a dynamic and rapidly growing field of business of great interest to the public, especially to the business and academic community. This technology should achieve its practical application in the future and thus enable better financial reporting and business decision-making in different companies around the world.

The disadvantages of the article are visible in the fact that this field of business is still new in today's world, i.e., it is in an experimental phase, which manifests through its scarce practical application. This is partly due to various doubts and limitations that currently exist, which primarily relates to the need to define business models, legal framework, and tax treatment in the application of this technology more precisely. Recommendations for new articles on this topic include the need for more detailed analyses that would imply the identification of new key insights that would be related to the future application of these technologies in the world. This primarily refers to the impact that these technologies could have on humans in their business environment, which can certainly be associated with the increasing use of artificial intelligence.

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THE RESISTANCE CAPACITY OF THE EUROPEAN MONETARY UNION TO SYMMETRY SHOCKS AND THE POSSIBILITY OF ESTABLISHING AN OPTIMUM CURRENCY AREA

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ABSTRACT

Seventy years ago, the European Union was created with the aim of economic and political unification of European countries, and by the decision of the European Council at the end of the 1980s, the idea of a European monetary union was conceived, which would later result in the creation of the Euro currency and the Euro area, which was aimed at strengthening monetary policy. This paper will study the creation and analysis of the European monetary union, the development of the Euro area and the third phase of the creation of the European monetary union—the introduction and sustainability of the Euro as a European currency unit. The paper studies the concepts of the European Monetary Union and analyze the organization of monetary policy, and the concepts of the Eurozone, the creation of the Eurozone, the importance of the European Central Bank and its influence on the sustainable stability of the Eurozone and the currency. The paper also analyses economic policy and the emergence of an optimum currency area, where the analysis will focus on Mundell's theory and the long-term sustainability of the value of the Euro.

Keywords: *European Union (the EU), Euro, European Monetary Union (the EMU), Eurozone, Mundell theory of optimum currency area.*

1. INTRODUCTION

The European monetary system was created as a unique representation of economic integration and represents a monetary policy created by coordinating several member countries with the aim of being adaptable to all political, economic and economic demands of each member country individually and to be acceptable at the level of all member countries equally. The European monetary system is created as a result of an equal market within the borders of the Union with the aim of global sustainability in the field of trade and cooperation with the rest of the world, which is visible through the applicable foreign policy. With the aim of maintaining a functional market of products and services, the idea of creating a universal currency is created, which would contribute to the stabilization of the capital market and unify the internal market, which would not vary due to the different value of individual currencies. The idea of a monetary union was primarily to create a stable value of the currency so as not to disrupt the common market, which from the very beginning represented a major challenge in the creation of the Union (Kandžija, V. and Host A., 2001, *Europski monetarni sustem*, Zagreb, 1263-64). In order for the European monetary union to maintain its stability, it was necessary to realize its structure through three phases in order to maintain stability.

Therefore, it was primarily necessary to increase the cooperation of all central banks of the union members in order to achieve freedom of capital transactions and more efficient economic convergence, which will eventually prove to be an ideal measure of the quality of the use of the universal currency in the wider European area. After gaining the trust of all central banks, it was possible to start implementing a more synchronized monetary policy that at no time disturbs the stability of the economy, trade and foreign policy, and even in the event of instability, it will be able to actively react with the aim of preserving a stable currency that will be the bearer of foreign and domestic policy. The strengthening of the monetary policy itself should have resulted in the creation of the independence of all the central banks of the member countries, which will be able to independently be the bearers of a currency that would unite them at the same time giving them equal value for all members. The monetary policy itself was supposed to result in the introduction of a single currency – the EURO, which ultimately happened with the third phase of the implementation of the European Monetary System, when on January 1, 1999, monetary policy was actively implemented in all the Central Banks of the member countries, which should lead to stability and growth. internal politics and economy throughout the Union (ECB: Economic and Monetary Union). In order to avoid periodic variations in economic processes, changes in the value of products and services, and to define a stable valuation within the Euro area, the idea of creating a single currency for business and investment that will maintain economic stability and simpler and more transparent trading with less risk was conceived. This alone would encourage better quality trade with more realistic values, which would ensure better prices, but would also enable advantages on a global level, such as attracting investment and promoting trade so that the internal economy could profit. By doing so, the internal economy would become more stable and could compare with other countries in the world, which would increase imports and exports, and would not stimulate sudden economic changes in internal and external trade, which is present due to the influence of other world economies (ECB: Which are the advantages of the EURO?).

2. ECONOMIC AND MONETARY UNION (EMU)

The European Central Bank determines the monetary policy of the entire zone with the main goal of keeping inflation under control. With this goal, he tries to connect the whole of Europe, and even though there is no common management and fiscal policy for the currency union, together with the finance ministers of the Eurozone countries, they implement monetary policy in the individual member states. They strive to bring closer the benefits of using a single currency, and through supporting the economy and trade, they provide economic reform to member countries. After the idea of an economic and European monetary union was conceived, a provision was established to create a common union consisting of a central banking system, a common economic region and a currency that will enable economic and economic stability for the entire Eurozone, which should become one of the strongest and largest economic regions of the world. Although some countries want to keep their own monetary policy with their currency in order to preserve their domestic policy, in order to join the Euro zone, they must meet the convergence conditions that should result in a sustainable exchange rate with average inflation of the entire Union, price stability and sound public finances with the best performance in domestic and foreign policy. The primary condition for a sustainable exchange rate is the adoption of the Euro through the stability of the exchange rate within two years and the proper integration of the single currency. Countries that adopt a single currency profit primarily because they receive the support of powerful economies, which strengthens the internal economy, thus lower interest rates for foreign investments, which has become one of the main motivations for meeting the conditions of member states and more profitable exports for the least developed countries of the European Union.

Thus, in stronger economies, the export of inflation was made possible through an increased business and financial cycle, where the advantage of higher demand and production for less money and investment appeared. However, despite all the motivations and incentives, some countries have not managed to balance the ratio of GDP and debt, maintain a high deficit, gross domestic product, and want to retain authority over their own monetary policy, so they remain only part of the European Union, but the European Central Bank tends to support all members to implement their own monetary policy in a more controlled manner in order to profit in the field of internal politics, recognize the benefits of a single currency in the entire Euro area and thereby strengthen the Union as a whole (Eichengreen, B.J. 1997. European monetary unification. Theory, practice and analysis. Cambridge: MIT Press, pp. 24-26). The European Union and the monetary policy it implements was the biggest political experiment of the last century, which resulted in the creation of a community of states that, after the war period, had to create a common sustainable market that, with one currency, would successfully restore the destabilized European economy, economy and market as a whole after two world wars. . The creation of the European Union created a unique cooperation in the politics of the states of a broken Europe and had the effect of contracting a defence economic policy with one central banking system and the freedom of movement of capital among the member states, which would have the positive result of encouraging more profitable trade and eliminating the fluctuation of foreign exchange and lower prices. The sovereignty of the member states should not have been violated, and the principle of the effectiveness of internal monetary policy implementation should not have been too great an obstacle in maintaining the legal order of the European Union. External sovereignty should not have been questioned, given that each country was supposed to be independent and equal to another member state of the Union. The challenge for each country individually was establishing a connection with the European Central Bank and meeting the conditions for the introduction of a single currency. With this change came the issue of loss of national sovereignty and retention of national identity, because in addition to population, territory and legal order, the main feature of the state is the implementation of government and independent monetary policy. And while some countries such as Andorra, Monaco, Vatican City and San Marino, Montenegro, Kosovo, regardless of belonging to the Euro area, introduced the Euro as the official currency, some were left out of the Euro zone, which is why the condition for entry and convergence of the domestic currency exchange rate was set. Many doubts arose when comparing the values of the Euro and the US dollar, which is one of the strongest currencies in the world and affects the currencies of all other strong economies and changes in the monetary values of other currencies. When introducing the Euro as a single currency, all member states must define their internal monetary policy and maintain monetary sovereignty. (Grauwe de, P. 2000. Economics of monetary union. Oxford: Oxford University Press, ch. 6). From the very beginning, the monetary union connected the state at the level of political development and political stable economies, and the problems the Union faced arose from asymmetric economic shocks that appeared as a result of achieving the ideal optimum currency area. Because of this, a difference appeared in the political organization of individual member countries, so they defined the distribution into coordinated market economies such as Germany, Belgium, Austria, Spain, Italy and Portugal, and those other countries that still had to adapt to such an organization as newly arrived countries. . With well-developed vocational training, quality implementation of the strategy for growth and development, an economy focused on the production of high-quality, high-value goods, and the implementation of an export-oriented growth strategy, the political economy of stable countries was secure. The countries that just entered the Union had to fight with other obstacles, they often relied on periodic devaluations of the exchange rate, they did not have the capacity to coordinate wages on the internal economic plan, they tried to save domestic demand and the market through the export of cheap goods, but the appearance of wage inflation and the

price did not favor them towards the creation of a single monetary policy, which made it difficult for them to access the Eurozone, which is why many countries later accept the single monetary policy of the Union. Such an effect is also visible on the economy of Croatia, which entered the European Union only in 2013, when it undertook to introduce the Euro as its currency after fulfilling all the conditions for joining the Eurozone. Given that Croatia has been recording economic development since 2011, it can be characterized as positive, but it is still below the European level. The unemployment rate has fluctuated since 2008, but it is still high, as well as government spending on health, which is high compared to other European countries, and the crisis imposed a public spending deficit, which resulted in changes in the public financing of the health system. GDP does not meet desired expectations and growth is only slightly more visible at the end of 2021. With the entry into the year 2023, Croatia will officially enter the Eurozone, will officially accept the Euro as its single currency, and the effect of creating an optimum currency area on the territory of Croatia as a member of the Union has yet to be seen (Bogut, M. 2022. *National library of medicine, Economic crisis, health systems and health in Europe: Country experience*).

3. EUROPEAN CENTRAL BANK AND (A)SYMMETRICAL SHOCKS

The European Union, as an alliance of 27 member states, formed the European Central Bank as an integral part of the creation of monetary policy, whereby the countries of the Eurozone, currently 19 of them, adopted the Euro as their currency and thus secured their place in the Eurozone by implementing a profitable monetary policy of the European Union. Thus, the capital of the European Central Bank became the capital of the Central Banks of all member countries. The European Central Bank is located in Frankfurt am Main, Germany with the current President Christine Lagarde and implements the single monetary policy of the European Union as a supranational monetary institution whose main interest is maintaining an open market policy, promoting the ideas of a single monetary policy of the European Union in the world and a discount policy that would have its influence had on the supply and demand of money in the internal and external monetary policy of the Union. The current capital of the European Central Bank is around four billion Euros, but with each new entry of a member state into the Eurozone, the capital increases because as new members they are obliged to provide a share in ownership with the condition that the supervision of individual banks depends on the supervision of national monetary authorities. The independence of the European Central Bank is a great advantage of higher quality, more credible and more effective action of the European Union, which, thanks to such functioning of monetary policy and economy, should more easily cope with the challenges of foreign and internal politics, economic oscillations on a global level, and more prioritize and more consciously deal with the financial costs of monetary expansion policies. The main reasons why, even in the very formation of the European Central Bank, a decision was made for its independence from all other institutions and bodies of the European Union were determined with regard to the experience of the economic and political situation after the collapse of socialism, the need to create as many independent central banks as possible on the territory of the Union in order to more easily adopt the idea of a free market, which until then was most characteristic of the western economic and commercial market. In retrospect, it can be said that the independence of the European Central Bank has become the main condition for the establishment of the most stable economic policy of the European Union. The result of independence proved to be functional, operational and methodological, so the conduct of monetary and economic policy became an inspiration for achieving sustainable growth and development. It turned out that in order to achieve a better effect on the macroeconomics of the entire area, the stability of the Central Bank and general price levels should be used as the main measure for a better economic situation.

This fact proved to be a good outcome for the stronger economies of the member states of the European Union, such as Germany, which was the benchmark for setting the conditions for the monetary policy of the European Union in its infancy. The European Economic and Monetary Union can be analyzed through an autoregressive analysis of the symmetry of supply and demand shocks between the countries of the Eurozone and other countries of the European Union. Excluding the period of transition and dynamic adjustment in the Union, the results of symmetry shocks are most visible among the countries with the largest economies such as Italy, Germany and France with the countries of Central and Eastern Europe. Predictions are that with the current dynamics of the economy and the conduct of economic policy, all economically stable countries of the Union should maintain dominance in the Eurozone against smaller countries that should or have already introduced the Euro as their currency in the near future. In doing so, an optimum currency area is created with emphasized costs that are lower the greater the symmetry between individual shocks. Demand and supply shocks can have different effects on the economy, but the more dominant shocks should be demand shocks because they lead to higher goals in economic policy in the short term. The ability to identify shocks defines the importance of the cost factor in the formation of a currency union. Symmetrical shocks cause economic costs in a currency union if two or more countries are hit by the same shock, and production, changes in wages and prices are different per individual country, thus cancelling the economic effect, as a result of which there is an imbalance between countries, the emergence of international competitiveness and unwanted costs because countries cannot use the same exchange rate to eliminate the resulting imbalance. Monetary policy is implemented by each country for itself, but all countries implement a common economic and monetary policy formed for the European Union, and all countries strive to connect aspects of their economies in order to avoid shocks that could damage the entire economy of the Union. In doing so, all countries must behave as if they were one country, because for the internal market there is no difference in the relationship between demand and supply, and these standards harmonize and standardize the work of the Union. European standards are set that are valid for everyone equally, for all services and products, in order to obtain quality assurance and consistency of the implemented uniform policy. An economic shock is a sudden and unexpected economic variable that disrupts an economy's primary cycle of development. The shock can be symmetric or asymmetric, and in the case of a symmetric shock, it will appear in the entire area, spreading equally through all units, sectors and areas of economic policy. An example of this in the European Union is the case of the global recession, which had a uniform effect on the entire Union. Symmetrical shocks, which are mostly of global origin, cannot be influenced too much, but must be acted upon, so an alliance of countries such as the European Union should not have an unsolvable problem, considering that they share the obligation to solve it among themselves with the aim of preserving economic and monetary stability as much as possible policies. In the case of asymmetric shocks, the question of sustainability arises considering that not all countries are in the zone of a single currency with a single interest rate, so the question is how much the policy of joint power can help in realizing the security of the Eurozone and achieving macroeconomic goals in the entire Eurozone specifically if all economies are not aligned. Therefore, the question remains whether due to asymmetric shocks the survival of the Union is questionable, given that each country does not have equal circulation in economic policy, equally strong economy and cannot provide equal contribution to the Union's internal policy. During the formation of the European Monetary Union, there was no discussion of the above, given that during the formation of the monetary policy of the Union, there was a gradual adjustment to the differences in the economic structure, which could eventually lead to asymmetric shocks. At the very beginning, the fact was that the more similar economies are, the less possibility of shocks and destabilization of the economy.

With the expansion of the Eurozone, doubts arose about the acceptability of implementing a single economic and monetary policy of the European Union, which is why it was necessary to start working on macroeconomic shocks due to the demand and supply of services, which are mostly faced by the less developed countries of the European Union. The appearance of a high correlation coefficient between a series of shocks in the economic policy of the Union should testify to a high degree of symmetry in the economic structure of the entire community. However, two outcomes remain based on these items: there is not enough evolution in the structure of European economies and economic and monetary policy, and convergence is indispensable in order to avoid the occurrence of shocks in the Union's economy, or the presentation of false stability is the reality of the Union's economy with a temporary effect on the symmetry of the economic structure. This is precisely why the European Union strives to promote complete mutual integration so that no new demand and supply shocks occur and so that a dynamic measure of maintaining the economic picture in the internal monetary policy does not have to be applied in order for the Union to survive in its entirety. However, time will show how effective the overall integration of Europe and the entry of all member countries into the Eurozone will be in the evolution of convergence and the achievement of currency stability and the very avoidance of asymmetric shocks, which are the least desired results of the Union.

4. MUNDELL'S OPTIMUM CURRENCY AREA THEORY

Professor Robert Mundell is remembered in the world of economics for creating a model of economic analysis known as the Mundell-Fleming model, in which he describes the functioning of a small economy and the possibility of opening up to international trade in goods and financial assets. The analysis of the model is done through the creation of monetary and fiscal policy in a concentrated area. The framework of the model is stable and static and takes its roots from the extended IS - LM model where they share a philosophical and methodological approach, both models are linear and their assumption is a fixed consumer price. Mundell's model shows the short-term relationship between the exchange rate, interest rate and output, focusing on their mutual relationship. By creating a model, he created an approach to modern macroeconomics, and for that reason, all future generations of economics are grateful to him. Because of his work and participation in the analysis of economic policy, he is considered responsible for the formation of the European Monetary Union because he encouraged European nations to give up their currencies and form a single currency. In order to encourage a growing economy, he advocated maximum tax rates of 25%, because low rates and weaker fiscal policy are the impetus for economic expansion, and interest rates and strict monetary policy should be the most important tools in the fight against inflation. Such an approach was adopted by the US President Reagan in the 1980s by reducing tax rates and setting interest rates high in order to keep inflation under control (Springer-Verlag Berlin Heidelberg. 2008. Macroeconomic imbalances and inflation dynamics in a Mundell-Fleming-Tobin Framework). Due to the increase in the internal and external imbalance of world economies, inequality is possible, and the question arises as to how adaptable Mundell's model is to today's challenges of economic global politics. Mundell's model is the best indicator of the relationship between an open economy, foreign trade and financial transactions. The model is a standard macroeconomic model and the most popular model of contemporary economic analysis, however its applicability to the reality of the economy is questionable. The applicability of the model depends on the economic policy of the individual country where it is applied, because some assumptions about the results may be unrealistic, given that the approach is generalized by analyzing trade and international capital mobility, and the most realistic analyzes of this model will result from three aspects: total demand, aggregate supply and balance of payments Fleming, J.M. 1962.

Domestic Financial Policies under Fixed and under Floating Exchange Rates, IMF Staff Papers). Given that Mundell's model assumes of a fixed price level and shows the interaction of the commodity and money markets, it can represent the fluctuation of total income in an open economy, which provides insight into the mobility of capital. In view of this, the economy can freely borrow from the international capital market at the prevailing interest rate that defined the interest rate of the internal policy. Therefore, the interest rate is not a variable of a small concentrated economy, and macroeconomic adjustment is realized only through a change in the exchange rate, and thus the central bank of a country can use the exchange rate variation as a response to a change in economic conditions. Within this model, the interest rate of the concentrated area should be equal to the world interest rate, which is favourable for the domestic economy, considering that the interest rate, although subject to change, cannot remain outside the framework of the world interest rate for too long and disrupt the implementation of an economic policy adapted to the domestic economy. The very difference that appears is removed through inflows and outflows of financial capital, and according to Mundell's model, the behaviour of financial variations is crucial in the adoption of a country's exchange rate system. Each country, considering the implementation of its economic policy, should make an adjustment in the system of a variable exchange rate so that the intervention of the central bank in the foreign exchange market is not necessary. In the event that the domestic interest rate is above the world interest rate, the inflow of credit becomes surplus and the domestic interest rate rises again, or if the domestic interest rate falls, there will be an outflow of capital resulting in a lack of funds to cover the difference (Karmakar, D., 2022. Mundell-Fleming model: meaning and main message).

5. OPTIMUM CURRENCY AREA

An optimum currency area is a geographical area where one currency dominates the financial market, defines economic and economic policy and creates an economic arrangement in which there is one national currency with the aim of maintaining capital market integration and facilitated trade. In the analysis and work of Robert Mundell, it is theorized that countries with a strong economic connection and a separate national currency have the most efficient economic arrangement, and due to the use of a common currency, no country risks destabilizing the fiscal and monetary policy of individual economies. According to Mundell's model, there are more positive criteria in favour of a common currency, although the primary concern is asymmetric shocks that, by imposing them in the theory of the optimum currency area, can cause a negative effect, such as the currency crisis of the Eurozone caused by the crisis of the balance of payments, the reduced value of the national currency and the accumulation of debt as a result macroeconomic differences before and after the introduction of the single currency. Mundell's approach to creating an optimum currency area facilitates labour mobility, reduces administrative segments and barriers, cultural barriers and capital mobility become minor, and supply and demand among countries is distributed in the market minimizing economic shocks. Secured capital in economic growth enables the transfer of money to regions or countries where it is needed, and therefore creates a better effect of tax revenue. The creation of a larger volume of trade in international trade creates a profit when adopting a single currency, which implies encouraging the establishment of an optimum currency area. Also, such an approach can create a negative effect on the domestic market due to high competition from too many of the same and specialized industries and economies. Therefore, the diversification of products and limiting the specialization of work results in fewer symmetry shocks, because then countries are less sensitive to the criteria for creating symmetry shocks, and thus the degree of integration between countries is higher.

The homogeneity of the optimum currency area is manifested through the collective transfer of fiscal policy and the sustainability of the single currency, because large differences encourage the appearance of asymmetric and symmetrical shocks, the destabilization of the cooperation of countries that strive to create an optimum area and compete in the global trade and economic market. The application of the theory of the optimum currency area is manifested primarily through the acceptance of a common currency in the countries of the Eurozone, and the extent to which the criteria of the Mundell model really yielded results through the application of such a monetary policy (Kelly, C. R. 2021. Investopedia.com, Optimum Currency Area). However, is the expansion of the Eurozone the solution to creating a more stable and optimum currency area that can compete globally? An indicator of negative effects is the Greek crisis in 2010. After 2008 and the global recession, debts piled up and the Greek government declared financial collapse, asking for help from the Union. After the interest rate rose, the loans disrupted the picture on the world market, and Greece sank in financial, economic and trade terms, the European Union came to the rescue by providing a loan that would reduce the external debt. Although everything looks ideal at first, Greece paid for it with reforms and cuts in the internal economy. The European Commission, the European Central Bank and representatives of the International Monetary Fund controlled the outcome of the crisis. Greece had to come to terms with the fact that civil servants' salaries will be reduced, pensions will be reduced and changes will be made to the implementation of internal monetary policy, which often led to strikes and riots in the streets of major cities. That battle for survival lasted a little more than six years and in 2018 Greece officially came out of the crisis. After the exit from the crisis, the question remains whether the issue of internal monetary policy was resolved in this way, whether the need to create external debt was really inevitable, and whether the participation of the Union was really a salvation for the member country (Papadimitriu, J, 2020. DW.com., *Nakon deset godina: Je li završena odiseja grčke ekonomije?*). When analyzing the optimum currency area, it is important to approach the analysis of inevitable crises that encompass domestic economies and affect the overall economic picture, and precisely because of this, the credibility of the formation and expansion of the Eurozone, the introduction of a single currency, and the maintenance of an optimum currency area is questionable. The probability that the crisis would have been felt less or the effect on the monetary policy of individual member states would have been less devastating remains questionable, and therefore the proof of the effectiveness of creating and maintaining an optimum currency area remains incomplete. Although the original idea was to limit fiscal transfers in order to reduce the possibility of disrupting the stability of the currency area, the idea was abandoned due to the emergence of external debts and the disruption of economic mobility at the global level. This confirmed the implied asymmetry of economic shocks affecting the optimum currency area. When analyzing the optimum currency area of the Eurozone, the concept of optimum is not actually equated with macroeconomic costs and microeconomic benefits in the internal market. Optimality can always be changed by the application of monetary integration and is an unpredictable result no matter how much one tries to influence it. Optimality is tried to be presented through an area that applies a single currency, a single monetary fiscal policy, a variable exchange rate with regard to the external area, and the achievement of full employment, stable internal prices and low inflation. The most important characteristic for achieving an optimum area is the realization and nurturing of an open economy with a ratio of tradable and non-tradable goods and maintaining a fixed exchange rate of the single currency in that area (Schelkle, W., Britanica.com. 2022. *Optimum currency area*). The impact of economic policy in an optimum currency area can best be measured through the local economy where the currency affects the economic performance of a certain area and the economic benefit can then be measured by direct consumption and the application of that consumption.

Economic benefit is measured as economic profit in a defined area of economic activity, and its effect is calculated as a cost created at the end of the effect. An economic shock that occurs as an asymmetric result of a currency union affected by that shock creates a difference between the economies of the member countries. Therefore, if one country experiences a shock, there is an imbalance that causes a price variation in the production of individual countries, an economic imbalance in trade and the appearance of inflation in the entire area. The main task of the Union during the expansion of the Euro area should therefore be to pay attention to the effectiveness of exchange rate adjustments, especially in the transitional period and the transition to the adoption of the single currency, the synchronization of business cycles and the analysis of the nature of the shocks that are imposed on the economy of the entire Union as well as local economies (Agha, N. 2002. *Choosing the optimum area of economic impact*). It was the Maastricht Treaty that set the key convergence criteria for all countries that enter the currency area of the single currency, trying to maintain the competition of member countries' economies, avoiding maximum shocks and guaranteeing stable convergence. After the introduction of the Euro, it is evident that member countries enjoy the benefits of convergence, low interest rates, stable growth and development of monetary policy, and guaranteed stability of interstate political harmony (Nikić, G., 2001. *Smijemo li se odreći monetarnog suvereniteta?*). In the past two decades, the coalition of all the countries in the Union, the economic crises that broke out at the global or European level and the creation of external debts that are impossible to settle without the participation of the European Union have shown several shortcomings of the European Monetary Union, such as sensitivity to asymmetric shocks, inadequate intervention in the event of a breach optimum currency area and the difference in the economic structure. The lack of labour mobility and the transfer payment system limits the Union's ability to adapt to the emerging crisis. Nevertheless, the Union is trying to adapt to the crisis by applying stabilization measures while simultaneously promoting economic integration, fiscal discipline and keeping the expansion of the Eurozone stable and gradual in order to avoid any economic shocks that, in their asymmetry, would damage individual economies or the economy and trade transparency of the entire Union.

6. CONCLUSION

Seventy years ago, the European Union was created with the aim of economic and political unification of European countries, and by the decision of the European Council at the end of the 80s, the idea of a European monetary union was conceived, which would later result in the creation of the Euro area and the Euro currency. The single currency, the Euro, which today has become part of the daily life of Union citizens, besides strengthening Europe at the international level, has the primary task of maintaining economic development, harmonizing trade and facilitating the implementation of foreign policy for all member states, which should result in a single European market that can compete with financial transactions, global and dominant markets. The postulates of the theory of the optimum currency area are lower costs with the condition that the business cycles of the member countries of the monetary union are aligned. Given the fact that symmetrical supply and demand shocks are significant for the GDP of Croatia, especially after 2006, it supports the theoretical assumptions about the expansion of the currency area, in this case by joining the monetary union of Croatia. What is expected from the introduction of the Euro, apart from the loss of the autonomy of conducting a counter-cyclical monetary policy, is the alignment of business cycles so that the common monetary policy works counter-cyclically in the wider currency area. The research carried out in this paper wanted to examine the assessment of respondents about the introduction of the Euro, about the common monetary policy, about the Euro area to which Croatia belongs. Optimism expressed through the questionnaire is the result of respondents' positive assessments of the impact of the introduction of the Euro on future economic trends, currency risks in the context

of improving the economic picture of Croatia. The perception of the positive direction of Croatia as a member of the EU was absent to a certain extent, so it is possible to conclude that it was influenced by inflation, the unfavourable global economic picture, or that opinion prevailed due to internal politics and the unfavourable economic situation of the previous three years. Despite this, the respondents are convinced of the creation of a positive influence of the Union on a better general economic and political image of Croatia and the possibility of maintaining long-term stability of all members.

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ASSERTIVE COMMUNICATION OF HEALTHCARE PROFESSIONALS EMPLOYED IN THE REPUBLIC OF CROATIA

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ABSTRACT

Healthcare professionals possess various professional competencies that are necessary for their daily work with patients. In order to provide patients with adequate health care service, in addition to professional competence related to their narrower field of activity, healthcare professionals must also possess and some other competencies. Among the most important competencies are certainly those related to interpersonal communication. Communication competence includes the application of desirable and constructive communication styles, and among many different styles, the assertive communication style is considered the most constructive. Some of the research carried out so far has shown that assertive communication can be improved by attending various educational programs. Therefore, the goal of this research was to examine the level of assertiveness in the communication of healthcare professionals, and based on the data obtained, to determine whether there are differences in the application of assertive communication with regard to the level of education of healthcare professionals. The research was conducted online, by distributing an anonymous survey questionnaire, and various healthcare professionals employed in the Republic of Croatia participated in the research. The survey questionnaire was specifically constructed for the purpose of this research and consisted of questions related to the sociodemographic characteristics of the participants and questions related to the self-assessment of assertive communication. The results showed that there are differences in the application of assertive communication style with regard to the different level of education. This research provides a more detailed insight into the application of assertive communication among healthcare professionals, which can directly be an indicator of the effectiveness of formal education of healthcare professionals employed in Croatia.

Keywords: *Assertiveness, Communication, Healthcare*

1. INTRODUCTION

Healthcare professionals possess various professional competencies that are necessary for their daily work with patients. In order to provide patients with adequate healthcare service, in addition to professional competence related to their narrower field of activity, healthcare professionals must also possess and some other competencies. Among the most important competencies are certainly those related to interpersonal communication. Plaza et al. (2007) state that communication is the fundamental basis for nursing activities, but the same applies to the activities of all healthcare professionals who participate in the direct or indirect provision of health care.

The importance of communication is most prominent in the relationship between healthcare professionals and the patient, and ultimately it can affect the quality of health care (Plaza et al., 2007). In addition to the context of the relationship between healthcare professionals and patients, communication competence is also important within the organizational context. Communication competence includes the application of desirable and constructive communication styles, and among different styles, the assertive communication style is considered the most constructive. Antolović and Sviličić (2020) define an assertive communication style as a style that allows an individual to express his opinion clearly and directly without harming the opinion of the other person with whom he is communicating. The application of assertiveness in communication enables the communication process to become more efficient, because it removes potential obstacles in communication (Antolović and Sviličić, 2020). Assertiveness in communication between healthcare professionals and patients plays one of the fundamental roles in the context of social skills management, and assuming that it is applied correctly, it is precisely assertive communication that enables the delivery of complete health care and services (Hernández-Xumet et al., 2023). The concept of complete health care implies health care of the highest quality, and one of the determinants of such health care is the safety of users of health services. The fact that assertive communication is one of the important links in ensuring the safety of users of health services has been also pointed out by World Health Organization (WHO) (2011). The WHO (2011) states that communicating assertively in the healthcare system is generally difficult due to various barriers, but nevertheless necessary in certain situations. Some of the barriers to assertive communication may be related to cultural differences or to the hierarchical order between different professions, as well as in the same professions regarding position and status. Hierarchical order is ubiquitous in healthcare institutions, and to reduce the possibility of errors or number of missed care, emphasis in such communication should be on what was said and not on who said it. Considering that the absence of assertive communication in clinical practice can have negative consequences, it is necessary to recognize all potential barriers so that they can be removed (WHO, 2011). One of the ways in which the mentioned barriers can be removed is the development of communication competences, which includes improving one's own assertive communication, recognizing assertive communication used by others, and developing one's own attitudes regarding the importance of assertive communication in healthcare settings. Some of the research carried out so far indicates that it is precisely through education that assertive communication among healthcare professionals can be improved. Guris et al. (2019) conducted their research with the aim of examining the impact of attending simulation training on improving assertiveness and other communication skills such as verbal expression skills. The research was conducted on a sample of 22 anesthesiology residents, and the results of the research showed that after attending the simulation training, there was an improvement in the tested skills. The authors of this research state that the aforementioned skills are extremely important in terms of ensuring patient safety, as they have a direct impact on the level of quality of health care (Guris et al., 2019). Another research based on the relationship between assertive communication and patient safety was conducted by the authors Omura et al. (2019). The aim of their research was to examine the perception of nursing students about attending a workshop aimed at improving assertive communication. The research was conducted on the sample of 111 undergraduate nursing students, and results showed that participants were generally satisfied with the workshop they attended. Among other results, almost 70% of participants stated that after attending the workshop they felt more self-confident when using assertive communication. Also, 88% of participants were more determined to use assertive communication after attending the workshop (Omura et al., 2019). In the following research, the influence of education training program on the development of assertiveness was examined.

Warland et al. (2014) conducted their research with the aim of examining the impact of attending workshops on the development of assertiveness among undergraduate midwifery students. The research was conducted on a sample of 41 participants, and the results showed that midwifery students showed a higher level of assertiveness after attending the workshop (Warland et al., 2014). Assertive communication is an indispensable link in communication of healthcare professionals, whether it is communication directed towards patients or mutual communication between healthcare professionals themselves. Therefore, the main goal of this research was to examine the level of assertiveness in communication among healthcare professionals employed in Croatia and, based on the data obtained, to determine whether there is difference in the application of assertive communication regarding their level of education. Based on the previously presented research, the following hypothesis was formed:

- H1: Healthcare professionals with a higher level of education communicate more assertively compared to healthcare professionals with a lower level of education.

In addition to examining the influence of the level of education, this research also aims to determine whether there are differences regarding other sociodemographic characteristics of healthcare professionals, and based on this, the research questions are as follows:

- RQ1: Is there a gender difference in the application of assertive communication by healthcare professionals?
- RQ2: Is there a difference in the application of assertive communication by healthcare professionals regarding the performance of managerial tasks?

2. METHODS

2.1. Sample

The research was conducted on a sample of healthcare professionals employed in Croatia. A total of 178 participants took part in the research, of which 24.72% (N=44) were male, and 75.28% (N=134) were female. Regarding age, the lowest recorded answer was 20, while the oldest participant was 59 years old. The average age of the participant was 35.94. The largest number of participants, 83.15% (N=148) of them lived in urban areas, while 16.85% (N=30) lived in rural areas. Regarding marital status, the largest number of participants, 48.31% (N=86) were married, followed by single participants (23.60%, N=42) and participants who were in a relationship (21.91%, N=39). The smallest number of participants, 6.18% (N=11) of them lived in an extramarital union. When it comes to the number of children, the largest number of participants, 50.56% (N=90) of them, had no children. Then follows 15.73% (N=28) of participants who had one child, and 24.72% (N=44) who had two children, while 8.99% (N=16) of participants had three or more children. Regarding the level of education, the largest number of participants completed undergraduate studies (43.26%, N=77), while the smallest number of participants completed high school (14.04%, N=25). The detailed distribution of participants regarding the level of education is shown in Table 1.

Level of Education	N	%
High School	25	14.04%
Bachelor's Degree	77	43.26%
Master's Degree	50	28.09%
Ph.D. and/or Postgraduate Studies	26	14.61%
In total	178	100%

*Table 1: Distribution of participants by level of education
 (Source: Own research)*

Regarding the profession, the largest number of participants, 49.66% (N=124) of them were nurses, followed by physicians (14.04%, N=25), midwives (7.87%, N=14), and physiotherapists (3.93%, N=7). The remaining participants, 4.49% (N=8) of them were from some other professions, such as radiological technologists, pharmacists, etc. When it comes to work experience, the lowest recorded answer was zero, which means that such a participant had less than a full year of work experience, while the highest recorded answer was 40. The average years of work experience was 13.68. Considering whether participants were employed in the public or private healthcare institutions, 92.70% (N=165) of them were employed in a public healthcare institution, while remaining 7.30% (N=13) of them were employed in a private healthcare institution. Considering whether the participants perform managerial tasks, 73.03% (N=130) of them did not have a managerial position, while the remaining 26.97% (N=48) had a managerial position.

2.2. Research instrument

A survey questionnaire used in this research consisted of an introductory part and a total of 18 questions. In the introductory part, the target group of respondents was specified, and the aim of the research was briefly described. Also, the participants were informed that it was an anonymous questionnaire and that they could opt out of filling out the questionnaire at any time. The questions were divided into two parts. The first ten questions represented the first part of the questionnaire, and these questions were related to the sociodemographic characteristics of the participants, such as gender, age, profession, level of education, etc. Most of the questions in this part of the questionnaire were closed-type questions with two or more answers offered, while a smaller part of the questions were open-type questions to which the participants had to enter short answers (for example, enter their age or number of children). The next eight questions represented the second part of the questionnaire in which the participants self-assessed their level of assertive communication. These questions were based on the test of communication styles developed by Brigham Young University (2004). The original test consists of 24 questions that assess assertive, passive, and aggressive communication style, but for the purpose of this research, only questions related to the assessment of assertive communication style were used. The aforementioned questionnaire was used in a study conducted by Dasgupta et al. (2012), who examined employees' perception of the application of different communication styles of their superiors, and the questionnaire was validated as valid and reliable. All eight questions used in this research, which refer to the self-assessment of assertive communication style were positively keyed, and they were answered using a five-point Likert scale ranging from 1 ("*Strongly disagree*") to 5 ("*Strongly agree*"). The possible range of points on each of the items is from 1 to 5, while on the overall scale it is from 8 to 40. In order to test the level of reliability of this measuring instrument, the Cronbach alpha coefficient was measured, and it was .749, which represents satisfactory reliability.

2.3. Conducting research

The research was conducted during March and April 2024 by sharing an anonymous questionnaire via social networks. Participation of the respondents was voluntary and anonymous. The obtained results were analyzed using descriptive statistics, while the differences between different variables were tested using statistical tests. Statistical analysis of the obtained data was performed using the IBM SPSS Statistics 29.0 software. Before testing the differences between the variables, the Kolmogorov-Smirnov test (KS) was performed, which showed that distribution of the obtained data deviated statistically significantly from the normal distribution (KS=.091, df=178; p=.001), and therefore non-parametric tests were used for further analysis.

3. RESULTS

As a preliminary step in determining the level of assertive communication, descriptive data were calculated for each individual item of the construct for assessing assertive communication. The results showed that the lowest mean was recorded on item 7 ("I can take criticism without being defensive.") and it was 3.78 with a standard deviation of 0.89. The highest mean was recorded on item 5 ("I can comfortably initiate or lead a conversation.") and it was 4.57 with a standard deviation of 0.65. Means with standard deviations according to each of the items of assertive communication is shown in Table 2.

ID	Item	Min	Max	Mean (St. Dev.)
1	In communication, I can recognize and highlight my good sides.	2	5	4.26 (0.70)
2	I can express my negative feelings about other people and their actions without being offensive or cruel.	1	5	3.95 (0.87)
3	I can accept compliments without denying them.	2	5	3.83 (0.96)
4	I stand up for my own rights, but I allow others to do the same.	2	5	4.05 (0.87)
5	I can comfortably initiate or lead a conversation.	2	5	4.57 (0.65)
6	I stand to get what is rightfully mine.	1	5	3.88 (1.01)
7	I can take criticism without being defensive.	1	5	3.78 (0.89)
8	I can easily express my positive feelings about other people and what they do.	3	5	4.60 (0.62)

*Table 2: Descriptive statistics according to each of the items of assertive communication
 (Source: Own research)*

On the overall construct for assessing assertive communication, the possible range of points was from 8 to 40. The lowest recorded sum of points was 20, and the maximum was 40, while the mean was 32.91 with a standard deviation of 4.00. In order to examine whether there are statistically significant differences in the application of assertive communication with regard to the level of education of healthcare professionals, a Kruskal-Wallis test was conducted. The results showed that participants with different levels of education apply assertive communication to different extents, but these differences were not statistically significant ($K-S=.377$, $p=.945$). Means (with standard deviations) according to each level of education, as well as the results of the Kruskal-Wallis test, are shown in Table 3.

Variable	N	Mean (St. Dev.)	Kruskal-Wallis	p
High school	25	32.92 (4.32)	.377	.945
Bachelor's Degree	77	32.75 (4.11)		
Master's Degree	50	32.86 (4.14)		
Ph.D. and/or Postgraduate Degree	26	33.46 (3.17)		

*Table 3: Results of testing the differences in the application of assertive communication with regard to the level of education (Kruskal-Wallis test)
 (Source: Own research)*

In order to examine whether there are statistically significant differences in the application of assertive communication with regard to the gender of the participants, the Mann-Whitney U test was conducted. The results showed that male participants use assertive communication to a greater extent than female participants, but these differences were not statistically significant.

Means (with standard deviations) according to the gender, as well as the results of the Mann-Whitney U test, are shown in Table 4.

Variable	N	Mean (St. Dev.)	Mean Rank	Sum of Ranks	Mann- Whitney U	Z	p
Male	44	33.14 (3,43)	90.36	3976.00	2910.00	-.129	.898
Female	134	32.84 (4,18)	89.22	11955.00			

*Table 4: Results of testing the differences in the application of assertive communication regarding gender (Mann-Whitney U test)
 (Source: Own research)*

In order to examine whether there are statistically significant differences in the application of assertive communication between healthcare professionals who hold managerial positions and those who do not, the Mann-Whitney U test was conducted. The results showed that healthcare professionals who hold managerial positions use assertive communication to a greater extent than those who do not hold managerial positions, but these differences were also not statistically significant. Means (with standard deviations) regarding managerial positions, as well as the results of the Mann-Whitney U test, are shown in Table 5.

Variable	N	Mean (St. Dev.)	Mean Rank	Sum of Ranks	Mann- Whitney U	Z	p
Managers	48	33.06 (3.21)	89.08	4276.00	3100.00	-.066	.948
Non-managers	130	32.85 (4.26)	89.65	11655.00			

*Table 5: Results of testing the differences in the application of assertive communication regarding the managerial position (Mann-Whitney U test)
 (Source: Own research)*

4. DISCUSSION

One of the goals of this research was to examine the level of assertiveness in the communication of healthcare professionals employed in the Republic of Croatia and the obtained results showed that healthcare professionals generally apply assertive communication at a very good level. Analyzing the results according to different characteristics of assertive communication, it is evident that healthcare professionals need to improve their communication in certain situations, primarily when accepting criticism and compliments, and when standing up for themselves. On the other hand, among the most developed characteristics of assertive communication are the expression of feelings about others and comfortably initiating or leading conversations. In addition to determining the level of assertive communication among healthcare professionals employed in the Republic of Croatia, another goal was to determine whether there are differences in the application of assertive communication regarding gender, level of education and managerial position. The results of the research showed that male participants use assertive communication to a greater extent than female participants, but these differences were not statistically significant. When it comes to differences regarding the different level of education of healthcare professionals, assertive communication is used to the greatest extent by those who have completed a Ph.D. and/or postgraduate study. They are followed by healthcare professionals who have completed high school, then those who have completed graduate studies and finally those who have completed undergraduate studies. However, by conducting statistical tests, it was determined that these differences were not statistically significant. When it comes to the differences regarding managerial positions, healthcare professionals who hold managerial positions use assertive communication to a greater extent than those who do not

hold managerial positions, but even these differences were not statistically significant. From the obtained results, the hypothesis of this research, which assumes that healthcare professionals with a higher level of education will communicate more assertively compared to those with a lower level of education, was rejected. In addition to the rejection of hypothesis, the answer to the research questions was also obtained, and it is that there are no statistically significant differences in the application of assertive communication among healthcare professionals regarding their gender and managerial position. Given that the results of this research showed that healthcare professionals in Croatia apply assertive communication at a very good level, the rejected hypothesis does not have to be interpreted as a negative outcome. On the contrary, healthcare professionals use assertive communication, regardless of whether they have only completed high school or the highest level of formal education, i.e. postgraduate studies. Considering that no statistically significant differences were found regarding the level of education, it can be concluded that the acquisition of assertive communication skills is equally represented at all levels of education. However, healthcare professionals have not shown that they apply assertive communication in all situations equally, and therefore their communication skills in this area can still be improved. Healthcare institutions should work on further developing assertive communication skills through continuous professional education programs. The aforementioned programs should include the improvement of existing skills through various educational trainings and should include the development of the attitudes about the importance of communication skills in the health system. Hernández-Xumet et al. (2023) state that assertiveness in the context of relational skills should be an integral part of the education of healthcare professionals. The importance of effective communication between healthcare professionals and patients is unquestionable, but the importance of mutual communication between healthcare professionals should not be ignored either. Heidemann et al. (2020) state that effective communication between physicians and nurses is essential for ensuring patient safety. Physicians and nurses are indispensable links of healthcare teams, especially when it comes to providing care in acute conditions. However, in the process of providing care, all other healthcare and non-healthcare professionals should not be neglected either, because all of them can ensure the provision of quality health service only with an interdisciplinary approach and effective communication.

5. CONCLUSION

Healthcare professionals in the Republic of Croatia have shown that they apply assertiveness in their communication at a very good level. Assertive communication represents the most effective form of communication, and therefore it is necessary that this kind of communication is used in the health system in order to ensure quality health care for users of health services. The results also showed that there are differences in the application of assertive communication style regarding the different level of education. However, none of the mentioned differences were statistically significant, so it can be concluded that healthcare professionals apply assertive communication at a very good level, regardless of their level of education. This research provides a more detailed insight into the application of assertive communication among healthcare professionals, which can directly be an indicator of the effectiveness of formal education of healthcare professionals employed in Croatia. This research also represents a starting point for further research, and one of the questions raised is whether healthcare professionals communicate as assertively in communication with patients as in communication with other healthcare professionals. Also, the question arises whether healthcare professionals communicate equally assertively with their colleagues at the same level in relation to senior colleagues or colleagues who are at a higher hierarchical level. This research also has certain limitations.

Firstly, this research was carried out on the basis of self-assessment, whether there is a possibility that the participants perceive their communication skills at a higher or lower level than they really are. Also, the results would have been more relevant if a larger number of healthcare professionals had participated in the research.

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THE GEOECONOMY OF INTERNATIONAL AID IN AFRICA

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ABSTRACT

In traditional societies, the poor and the needy all had their place in the community, no questions asked about aid or assistance. The unfortunate needed the less fortunate and vice versa: mutual aid was a natural behavior and nobody never thought of it in terms of assistance. Who would have imagined that the same word would one day often designate enslaving practices against persons in distress, or serve as a justification for governments to conduct military or repressive actions against their own people? The history of debates and practices around the concept of aid shows that the inconceivable has in fact become a reality. More than a century and a half ago, Henry Thoreau was already worried about possible abuses of some voluntaristic actions: "If I knew for a certainty that a man was coming to my house with the conscious design of doing me good, I should run for my life" ¹ Today, Joseph E. Stiglitz, a Nobel Laureate in Economics in 2001, cites in his book "The Price of Inequality" some otherwise edifying examples of how aid-specialized organizations such as the International Monetary Fund were able to destabilize the entire populations in Indonesia or Ethiopia for example. Thus, aid as construed by the modern language has nothing in common with aid as experienced in vernacular communities. The often spontaneous and direct relationship between two individuals called "neighbors" has turned into a highly professionalized intervention defined in medium or long terms. An intervention often coupled with an instrument of power exercised against those it claimed to serve. In vernacular societies, sharing and caring were not only moral qualities, but also guarantees of a good social cohesion. Helping your neighbor meant acting at several levels. As an individual, it allowed you to enrich your own inner world and develop your ability to compassion and charity. Socially speaking, it boosts your moral authority over the other members of the community. Collectively, these individual and social fulfillment processes favored the emergence of similar qualities across the entire community that provide each member of the society with a productive balance between the requirements of personal fulfillment and those of social development. By embarking on the path of a large-scale vision of assistance, the religious authorities have greatly contributed to its institutionalization and corruption. For the Church, it was important to offer an institutional translation of the word of Christ. The love of the neighbor had to be encouraged indeed, but it was inconceivable that a deed representing the divine justice be not exercised in the name of the Church of God, the sole qualified institution to recognize the true poor from the false. And while aid was institutionalized, it was also specialized: the love of the neighbor shall be practiced preferably for the benefit of a given institution. For those seeking to reconstruct the exact history of the concept of aid, the events that followed this first institutional takeover are particularly instructive. They show that aid and aid promotion have always enabled whatsoever government in power to impose its image and protect its own interests. In medieval Europe, the institutionalization of aid by the Church endorsed this belief: anyone who wanted to be absolved from their sins had only to pay the price, the Church would then take care of the rest.

¹ Farcet G. (1998) «Henry Thoreau: L'Éveillé du Nouveau Monde-Henry Thoreau: The Enlightened from the New World», Paris, Sang dans la Terre, P.35.

The amount paid would prompt God to find them a place in Heaven. Thus, the original charity began to turn into a curious exchange currency: the aid to the poor taking on the appearances of a tacit insurance contract in order to increase the chances of the penitent donor to escape the flames of Hell. In short, aid as it was perceived by human societies has nothing in common with that preached by the international institutions and the aficionados of the pensée unique – a mainstream ideological conformism-. The concept of assistance was reviewed and examined by Bretton Woods institutions which broke up with the ancestral altruistic practices and traditions whether in Europe, in Africa or the Middle East. Far from this "stone age economics" of Marshall Sahlins, Adam Smith's invisible hand has deflected aid away from its main objective which is helping the destitute to recover from a situation of adversity instead of putting them in a chronic state of dependence on donors. As the late Hassan Zaoual put it: "a poorly devised assistance generates automatically state-aid recipients".

Keywords: Africa, Aid, Geoeconomy, International

1. THE ILLUSION OF AID IN AFRICA

In the march to the industrial revolution and the triumph of the capitalist economy, three phenomena have more determined the mutations in the discourses and practices: the seizure of power by the People acting on behalf of the poor –the universal suffrage ensuring this new power–, the threat of pauperism, and finally the discovery of aid as an instrument of economic promotion. Pauperism was even more threatening as it meant "the state in which individuals have the right to supply their needs by using public funds legally assigned to this purpose". For all these reasons, Eugene Buret (1840) himself did not hesitate to deem it as "the enemy of our civilization." The concern of every ruling class was that the growing pauperism, unlike poverty, was not merely a personal destiny marked by misfortune but rather a social problem of unprecedented magnitude. This horde of the "bad poor", inconsistent and dangerous for society as well as for themselves, did not only embody "a disorganized, spontaneous coalition escaping every social rationality" but it also sought to monopolize all rights to this legal assistance while refusing any constraints. However, these fears and this indignation did not all have the same background: the phenomenon that some refused to interpret as a result of the Industrial Revolution was felt by others as a social threat, a challenge to the mechanisms of capital accumulation. It is in this quite confused context that aid emerged as a possible solution to the problems created by the industrial evolution. In theory, the new economic discourse on the issue of misery remained ambiguous: on the one hand, it claimed that the new sciences and wealth production techniques would know how to eradicate poverty once for all, on the other hand, it had to recognize that social and economic inequalities were not only an integral part of this production system, but they were in many ways the support and counterpoint thereof as they represent a reservoir of unmet needs essential to this very new productive system. Thus, misery had some benefits as long as it was not scandalous .i.e. as long as it was only a natural or social inequality. Charles Dunoyer (1825), a pioneer of social economy, considered for instance -and he was not alone- that a "well-behaved and mellowed out" poverty was one of the conditions for economic prosperity and the proper functioning of a production system based on the division of labor. These inequalities had another advantage. By their sole influence and without any resort to violence, they had the power to beget more inequalities and thus produce large discrepancies in the degree of freedom which everyone could enjoy. This poverty had therefore its place in the logic of the self-regulating forces and the "invisible hand" of the market which are supposed to restore order and equilibrium at every moment, including during disturbances by factors exogenous to economy. One of the first to express reservations about the magical power of this "hand" is the Reverend Thomas Robert Malthus, described later by Keynes as "the first economist of Cambridge".

This economist, famous for his pessimistic theories on population, is also the one who placed the emblematic figure of "the Irish peasant" at the center of a hypothesis which went then against the grain of mainstream thinking. If this analysis of Malthus is so particularly relevant to us here, it is because it announced the revolutionary turn that would lead to a utilitarian and modern perception of aid: now that it is commoditized, aid will no longer be but an instrument of governance and subtle control of its target populations. The "Irish peasant" who haunted Malthus throughout his life, a poor quite similar to the poor in vernacular societies, symbolized a human archetype rather ominous for the future of the economy: eating only potatoes and dressed in rags, he seemed not attracted by any means to owning objects. He used to consume only what he produced and never bought a thing, and yet he seemed content with his lot. As a veritable anti-homo economicus, he was a permanent threat to economic growth. It is the persistence of men and women of similar behavior within society that led Malthus to two conclusions:

- That the "invisible hand" of the economy is not sufficient to ensure the smooth running of the productive system "at least as long as the Irish peasant would resist the seduction of manufactured needs".
- That for the system to sell its products, it should start helping this peasant so that his needs match as much as possible those of the economy.

The actual social assistance will no longer signify the supply of lifebuoys thrown here and there to give a chance of survival to useless mouths: it will be transformed into a dynamic and preventive instrument prompting each and every one to meet the production needs.

2. INTERNATIONAL AID & DEPRIVATION: WHAT ALTRUISM IS IT?

Despite the theoretical differences that we have just mentioned, there is a common aspect to human societies: the fight against all sorts of poverty. If the causes and remedies are different, the objective is widely accepted. The idea that some humans could be facing famine, doomed to an early death, illiteracy or a second class citizenship is contrary to what the concept of justice means to most of us. We know that all the great religions were concerned about fairness, inciting or even compelling their followers to regard the fight against extreme poverty as a moral duty. In fact, when addressing the fight against poverty by a donation, be it in kind (give a little or a lot of one's time), in cash or material (goods), it is difficult to dissociate the act as such - defined as altruistic – from the mentioned moral duty. "The disadvantage of sociological altruism is that it is perceived with values: right/wrong, good/bad, free/totalitarian, just/unjust) that make it incompatible with economic reasoning This moral altruism should be corrected by returning to the philosophical tradition.... In economic philosophy, altruism corresponds to an extended rationality expanding economic calculation to the relationship that individuals have with their social environment." ² "Essentially by definition, an altruist is willing to reduce his own consumption in order to increase the consumption of others." ³ This is a benevolent altruism. When an individual gives a coin to a beggar on the street or some of their time to an elderly person or shares their home with a poor etc... without turning this act into a media event or even disclosing it, this is generosity, solidarity, altruism. This was the case for example of the ARTC (Association for Research on Treatment against Cancer) in France at the end of the last century. This is also the case of some public corporations for the jobless and rehiring firms. The payment of government subsidies for the integration or reintegration of people in difficulty does not mean the ability to ensure a social follow-up that would attain reintegration.

² Jarret M-F. et Mahieu F.-R. (1998) « *Economie publique: théories économiques de l'interaction sociale* - *Public Economics: economic theories of social interaction* », Paris, Ellipses, p. 82

³ Becker Gary S. (1997) in Jarret et Mahieu *op. cit.* p. 21

This is somehow usurping public funds. Similarly, the payment of monetary amounts to charity can sometimes be a matter of a disinterested altruism, and sometimes of an interested altruism. In France, for example, a monetary donation to a recognized public utility association (such as Restaurants du Cœur) is compensated by a (monetary) reduction of the income tax. This mechanism introduced by the public authority raises several questions:

- The "donations" are not managed (managerially speaking) spontaneously by the donor but are organized and institutionalized. The state seeks to influence the behavior of households via tax incentives and it is possible to imagine that this behavior could have been different for some of them should there be no tax reduction in counterpart.
- An objection can be made immediately when all donating households are not all subject to income tax. Still, they have no financial benefit. The act of donating has then a specific externality for taxable households. This does not mean that they are not altruists but it is more likely that the computation of the tax reduction is one element - among others - that influences the choice and amount of the donation(s).
- In these conditions, can we consider that the donations from both (different) categories of households refer to the same altruism? Undoubtedly, they seek to mitigate the effects of poverty and / or partake in research breakthroughs that affect us all but it is arguable that in a market society, an act of donation has in counterpart a counter-donation -not symbolic as in other societies- but monetary. Non-taxable households make a social and / or moral "profit" out of their donations. Other households also derive a monetary benefit as the distinction between households by income class is established beyond the sources of their income and their respective expenses.

It is still possible to question the benevolent or malicious nature of altruism based on the advertisement that accompanies certain actions. If, basically, no one can argue that giving to the poor is a selfless act, the fact is that sometimes this act is revealed to the public while sometimes it is carried out with utmost discretion. Asserting one's generosity with or without a monetary counterpart such as the reduction of income tax in France, may mean that the donor searches the esteem of their entourage. The initiative makes sense only if it is related to what sociologists call the social interaction. Donating motivation and helping the poor depend then (at least partly) on how they appear in the eyes of the other whose recognition and approval are solicited by the donor. The individual act is not so disinterested and does not fall out of the societal framework. This type of behavior seems even more plausible when advertising donations becomes the norm. In a context of mass dissemination of information and media explosion, does the "Peoplisation" of charitable organizations and foundations that are continuously seeking donations for "just causes" denote altruism? The jury is still out! "And what if the stars were only icons entrusted to do good business for the humanitarian industry."

⁴ The President of UNICEF France confirmed bluntly: "Yes, we need the "Peoples", they offer us easy access to the media and arouse donors' interest in our cause. Emmanuelle Béart's press conference testifying to what she saw in Sierra Leone has become an event."⁵ The actress states in the same article that she "does not believe in altruism... but rather in exchange." This example is not exhaustive, yet is indicative of the "commodification" of aid, of the fight against inequality, of the fight against deprivation, of suffering and it is not for sure that this is done for the benefit of recipients only. Other associations such as Médecins Sans Frontières (MSF) chose to appeal to generosity by phone or the Internet, no showcasing on television. Finally, regarding the limits of "organized altruism", we would like to mention a few conclusions of the Audit office in January 2007, on the management of donations in the wake of the "natural" disaster, the Tsunami.

⁴ «Le Nouvel Observateur», Feb 22nd -28th, 2007, p. 94-97

⁵ Ibidem

In France, 340 to 350 million euros were collected plus 67 million euros of public aid. The report states that only one third was spent due to the flooding of international aid. The budgets were significantly too high for the actual on-site staff to manage. One can also read in this report that part of the donations received by charitable organizations or international agencies was redirected. The UNICEF for example transferred 57.4 million euros to its headquarters in New York. For the Red Cross and Catholic Relief Services, the percentage of amounts used compared to donations is about 40%. The amounts available can be granted to local NGOs, to intermediaries, namely in the building sector and public works. In an article published in "Le Nouvel Observateur", Serge Paugam (2013) underlined the enthusiasm for private solidarity "in the form of an appeal to generosity via the media This would be perceived sometimes with higher virtues than public solidarity which is often considered as bureaucratic and impersonal ... Of course, one must not despise this generosity, but must remember that it cannot be considered as an alternative to collective solidarities as conceived at the end of the nineteenth century." A little further on, the author denounces after all the fact that governments often react on the basis of one thing at a time and that more visible solidarity actions are those that take place in an emergency. "The news highlight, periodically, all the visible signs of a solidarity that we think spontaneous, but which is actually entertained by the media." Fighting against poverty via public policies and / or private solidarity, akin to altruism, has limitations and challenges theorists. For Van Parijs (2003), justice should be sought .i.e. allow everyone - not just in theory (location) - to have access to goods and services. «It is more about what is given to each and not what they do with it, it helps them achieve their own conception of life and not a particular conception that the society would consider superior to others. » That means to define a method whereby it is possible to offer opportunities to everyone and thus adhere to ethics without preaching morals. This is a major challenge for the theory of "modern" justice. A conception of an acceptable justice according to the author and which should be egalitarian in the sense that "it must express a form of material solidarity between all members of the concerned society.... Justice is not a matter of equity in exchange.... Nor is it a matter of collective optimality understood as the production of acts globally effective for the common interest. Some inequalities can be righteous, but only if they help improve the lot of the less advantaged. » Fighting inequalities may consist in acting upon the chances and capacities, real chances and concrete capacities. It doesn't mean to express intentions or show compassion. Galbraith considers the latter as "*the most truly conservative course. There is no paradox here. Civil discontent and its consequences do not come from contented people--an obvious point to the extent to which we can make contentment as nearly universal as possible, we will preserve and enlarge the social and political tranquility for which conservatives, above all, should yearn.*"⁶ Long before Galbraith, Simmel in his reflection on the sociology of poverty had "a disillusioned look on charity and the private⁷ and public philanthropy, these do not represent an end in itself but a means to achieve the cohesion of the society and the guarantee of social ties "(Paugam, 2013, 47). Does assistance aim to primarily satisfy the recipient? The donor? The established order? The example of the British trade unions (quoted by Simmel) which help the unemployed union member allows to understand that, on the one hand, they seek to alleviate income inequality but, on the other hand, they also preempt job seekers who will go now to offer their free work capacity at a lower salary, which would have the effect of lowering wages in their sector of activity.

⁶ Van Parijs Ph. (2003) « *Ethique économique et sociale-Social and economic ethics* », Paris, La découverte, p.5.

⁷ Philanthropy is therefore flourishing, especially in the USA where charitable endeavors are legion. The new philanthropists are however increasingly straying away from the traditional methods of foundations management. In fact, they are seeking to make their structures more financially and socially efficient while dreaming of the advent of philanthro-capitalism" The Birth of Philanthrocapitalism, The Economist, translated into French by F. Boisivon in «Problèmes économiques», n°2912, December 6th, 2006.

The author goes even further: helping the poor through assistance means to avoid riots, violence to obtain income through various ways; it's even to guarantee a certain stability to society to the extent that assistance is, in fine, conservative. "The goal of assistance is precisely to mitigate certain extreme manifestations of social differentiation so that the social structure can continue to be based on this differentiation" (Paugam, 2013, 49). We find this critique of assistance to the global poor with Thomas Pogge⁸. The international economic interaction is considerable and, contrary to Rawls, the author thinks that poverty and extreme poverty are not due to domestic (or national) causes. While it is true that some Asian and African countries had a comparable level of GDP per capita in the 1960s and that the African countries were largely outstripped 50 years later, this differentiation in the trajectory cannot be explained by domestic factors which, according to Rawls, are likened to the political culture, the religious, philosophical and moral traditions, the demographic policy, the governments etc. For Thomas Pogge, we must not ignore or obscure the burden of a history tainted by unspeakable horrors: sordid slavery, unscrupulous colonialism and even atrocious genocides. *"Though these crimes are now in the past, they have left a legacy of great inequalities which would be unacceptable even if peoples were now masters of their own development ... By seeing the problem of poverty merely in terms of assistance, we overlook that our enormous economic advantage is deeply tainted by how it accumulated over the course of one historical process that has devastated the societies and cultures of four continents."*⁹ Since the end of colonialism the world economic order has been based on rules in favor of the rich countries by protecting them, for example, from developing countries imports via the World Trade Organization (WTO). The control of information, of expertise, of production and access to Information and Communications Technology (ICT), gives rich countries a greater power of negotiation so that this world economic order reflects more the interests of the businesses and citizens of rich countries and, de facto, less those of the poor countries. In these conditions, assistance as an adjustment variable cannot reduce inequality - as little - but instead allows to maintain a hierarchy of wealth levels. To support his thesis, the author borrows the story attributed to Peter Singer *"of a healthy young professor who, walking by a shallow pond, sees a small child in it about to drown. Surely, Singer says, the professor has a duty to save the child, even at the cost of dirtying his clothes. And similarly, he argues, we have a duty to send money to poverty relief organizations that can, for each few dollars they receive, save one more child from a painful hunger death."*¹⁰ In the eyes of Thomas Pogge this perspective reinforces the common moral judgment that the citizens and the rich countries are as responsible for poverty as the healthy young professor is for the child. Several reasons explain this widespread feeling in developed countries:

- Psychologically speaking, it is a source of comfort for the people living in the developed world.
- Considering that the domestic factors are responsible for poverty means underestimating or ignoring the global factors. Since some countries are developing and others are not, it is possible to achieve the eradication of poverty on the basis of the domestic factors.
- Many governments in poor countries are corrupt which is hardly attributable to the world economic order but rather to the behavior of certain elites who do not care about the living conditions of their compatriots. Only after having established democracy and the rule of law in these countries that reforms at the world level could be initiated.

⁸ Pogge Th. (2003), Porter assistance aux pauvres du monde-Assisting the global poor-, *Raison publique*, n°1, Octobre, Bayard, pp. 104-108, translated to French by P. Savidan.

⁹ Pogge Th. (2003), Porter assistance aux pauvres du monde-Assisting the global poor-, *Raison publique*, n°1, Octobre, Bayard, pp. 104-108, translated to French by P. Savidan.

¹⁰ Singer P., (1972), « Famine, Affluence and Morality », *Philosophy and Public Affairs*, 1, 249-43 in Pogge Th. (2003), Porter assistance aux pauvres du monde-Assisting the global poor-, *Raison publique*, n°1, Octobre, Bayard, pp. 104-108, translated to French by P. Savidan.

Pogge prefers to emphasize that there is no corruption with neither the corrupted nor the corrupter! Corruption has the effect of enriching a minority at the expense of a majority maintained in a state of poverty or extreme poverty: lack of transparency in awarding public contracts, import licenses granted in return for the most generous kickbacks, bribes in arms industry, imports of unnecessary and overpriced products, etc... in other words, squandering public money and / or diverting revenues. Worse, "bribed politicians accept the development of sex tourism, the import of toxic products and waste, the location of polluting companies, the forced labor of young children", etc. That is to say so many causes¹¹ that do not serve the interests of the local population but that hinder their welfare and therefore, development. The solution to poverty and extreme poverty is not public assistance if it maintains the disparity in living standards, nor the private generosity of some and altruism of others (that must not be ignored) whose impact is very limited. Without hushing up the (co) responsibility of certain elites in the poor countries, according to Pogge, we must really:

- reduce the harm caused.
- not take advantage of injustice at the expense of those who endure it.
- compensate the poor i.e. reduce the impact of unfair global rules that result in positive externalities for rich countries (such as the exploitation of natural resources in poor countries) and negative externalities for poor countries (inveiglement of their resources, environmental pollution, namely greenhouse effects due mainly to rich countries' consumption patterns).

3. BACK TO THE SOURCES OF FAILURE OF AID TO AFRICA:

Between 1948 and 1952, the United States transferred more than 13 billion dollars (100 billion dollars today) to assist in the reconstruction of Europe after World War II. We agree to acknowledge the resounding success of the Marshall Plan to rebuild the European economies devastated by war. The plan did not only ensure the economic success of recipient nations, it also contributed, in the opinion of many analysts, to the restoration of political and social institutions of crucial importance for peace and prosperity today in Western Europe. This is true, but even if the idea of aid policy to Africa arose from the success of the Marshall Plan in Europe, these are two completely different realities. Presenting the positive results of the Marshall Plan as a promise of similar achievements in tomorrow's Africa is completely wrong. Why? First, the European nations were not totally dependent on aid. Despite the ravages of war, the economic revival of Western Europe was already underway; the continent had other resources. At their peak, the flows of the Marshall Plan represented only 2.5% of the GDP of the main recipient countries, such as France and Germany, and somehow they never exceeded 3% of the GDP of any country in the five year term of the program. Africa, long submerged by aid, receives today assistance for development equivalent to almost 15% of its GDP, more than four times the Marshall Plan at its peak. According to Dambisa Moyo (2009) "*Given Africa's poor economic performance in the past fifty years, while billions of dollars of aid have poured in, it is hard to grasp how another swathe of billions will somehow turn Africa's aid experience into one of success.*"¹² In addition, the Marshall Plan was time limited. The United States had set a target, the European countries accepted the terms of the contract and signed the document. Money flowed abundantly for five years only. In contrast to the Marshall Plan financial injection, decisive but short, Africa has, generally speaking, received uninterrupted support for at least fifty years. An ongoing aid for an unlimited duration so that no effort would be needed.

¹¹ The IMF latest estimates are edifying: the amount of money laundered is tenfold or even more since 1990. Other than drugs and forgery, the underground economy covers the trafficking in human organs, endangered species, industrial waste, counterfeit money, handguns and nuclear centrifuges.

¹² Moyo D., *L'aide fatale-Dead Aid*, Editions JC Lattès, 2009.

Thus, in the absence of any explicit threat of aid interruption, and as nothing inspires the feeling that one day it could end, African governments have had to consider the aid as a permanent and secure source of income; they have no reason to think that the lakes of lucre will not continue to flow indefinitely. There is no incentive to build long-term financial plans, no rhyme or reason to look for other ways to finance development when all you have to do is sit and wait quietly for your check to cash. Crucially, the Marshall Plan context was so different from the African context. Before the war, the devastated European nations had already the necessary institutions: they had an experienced public service, well-managed companies, an administration of the courts and effective social organizations. After the war, all it took was an injection of money to restart the machine. The Marshall Plan provided an aid for reconstruction, not for economic development. No matter how wrecked Europe was, it had a structure in place, a political, economic and physical structure, while, despite the infrastructure inherited from colonialism, Africa had not experienced any effective development. Building, and not rebuilding, the political and social institutions requires more than money. The flow of billions of simoleons of aid, poorly controlled and regulated as little as possible has resulted in undermining the establishment of these institutions as well as of a sustainable growth. In this respect, the recent and successful experience of Ireland (before the subprime crisis), which received substantial sums from the European community, cannot be cited as evidence that aid might work in Africa. For, as the post-war Europe, Ireland had the institutions and infrastructure required to master and control aid and make it produce a significant economic impact. Ultimately, while the aid provided by the Marshall Plan targeted the physical infrastructure mainly, assistance to Africa covers almost every aspect of the economy. In most poor countries today, the aid is channeled to the public service, the political institutions, the military, public health, education, infrastructure.... The more the scope of aid is extended the more corrosive aid is, and the greater aid dependency culture is. Aid advocates underline the economic success of the countries which today have ceased to be assisted after having received assistance in the past. These are countries such as those of the IDA (International Development Association). They are twenty-two countries and they include some of the emerging countries that experienced the greatest economic successes: Chile, China, South Korea, Thailand and Turkey. Three of them only are African: Botswana, Equatorial Guinea (mainly because of the discovery of oil deposits) and Swaziland. Aid champions suggest that these countries have substantially reduced poverty, increased income and improved the living standards thanks to a large-scale assistance. However, as in the case of the Marshall Plan, it should be noted that the aid flows in question were relatively moderate (i.e. less than 10% of the GNP) and of short duration. Botswana, often cited as the classic example of a good student of the IDA, had actually received substantial foreign assistance in 1960 (20% of the GNP). Between 1968 and 2001, the average economic growth of Botswana per capita reached 6.8%, one of the highest in the world. But it is not aid that is to be held accountable for this performance. Botswana had vigorously pursued a policy favoring the market economy and that is the key to its success - its trade policy was open to competition, monetary stability was sought and the fiscal discipline observed. Crucially enough, in 2000, the aid to Botswana represented only 1.6% of the national income, that is to say, a tiny proportion compared to aid nowadays in so many African countries. The success of Botswana lies in the fact that it ceased to be aid dependent. Until the middle of the first decade of the 21st century, many believed that aid was synonymous with poverty reduction. The theses which were developed afterwards came to deny this approach. In her book "Dead Aid", Dambisa Moyo cites the fictitious example of an African manufacturer of mosquito nets. He produces about 500 nets per week. He employs ten people who, as usual in Africa, maintain each fifteen relatives. Despite their hard work, these people cannot make enough nets to effectively combat the malaria-carrying mosquitoes.

A Hollywood star enters the scene, runs a crowdfunding campaign and bullies Western governments into sending 100,000 mosquito nets to the region. The operation amounts to one million dollars. The nets arrive and are distributed. A good altruistic action is accomplished. But once the market was flooded with these nets, the local manufacturer had to close down. His ten employees can no longer feed the 150 souls who depend on them (and who are now forced to live on alms), bearing in mind that in maximum five years the majority of the imported nets will eventually be torn and useless. This is the micro-macro paradox. An effective intervention in the short term can have only very few lasting benefits. Worse, it risks to unintentionally undermine the existing chances, no matter how fragile they are, of any authentic sustainable development. Thus, at first sight, aid appears to have a positive effect. But with hindsight, we see that not only the overall situation did not improve, but it worsened. In almost all cases, short-term assessments create a false impression of aid success. But this kind of assessments is not relevant when it comes to tackling Africa's problems over the long term. We should measure the effectiveness of aid by questioning whether it contributes to sustainable long-term growth and lifts up the greatest number of individuals out of poverty. And from this perspective, aid proves to be a failure. That is said, the proposal of a new food aid formula launched at the Food Aid Conference in Kansas City in 2005 was an attempt to give a new direction to the policy of assistance which could benefit African farmers. The said proposal would allow a quarter of the US Food for Peace budget to be used for the purchase of food in poor countries, rather than only buy food from American farmers and ship it by sea. Thus, instead of flooding the American food markets and ruining the local farmers, this strategy would lead to use aid money to buy the products from the local farmers and distribute them to the locals in need. Going back to the example of mosquito nets, one could imagine that the donors would buy those nets from the local manufacturers and then sell them or give them to the locals. This approach should be applied to all problems. Aid advocates argue that aid works - but that rich countries are not generous enough. They plead that if Africa was given a "big helping hand" i.e. a substantial increase in aid for the decisive investments, Africa could have escaped the persistent poverty trap. In fact, Africa needs increased aid, massively increased aid. Only then things will truly improve. In 2000, 180 countries subscribed to the Millennium Development Goals (MDG). This eightfold action plan targeted health, education, environment preservation, child mortality, and the alleviation of poverty and hunger. In 2005, the program cost was revalued: an additional injection of \$ 130 billion per year would be needed to achieve the objectives of the MDG in a number of countries. Two years after the collective commitment to this program the United Nations organized an international conference in Monterey, Mexico on the theme: Financing for Development, during which donor countries promised to increase their contributions (an average of 0, 25% of their GNP) and bring them to 0.7% in the belief that the annual additional 200 billion dollars would finally settle the persistent problems of Africa. In practice, most of the commitments made by donor countries were not honored, and aid champions, clinging to the failure of donor countries, saw in it the reason for the backwardness of Africa. But the notion of giving "a big helping hand", the decisive thrust, skirts one of the great problems of aid, namely that it is fungible - that the amounts assigned to a certain goal can be easily diverted, and used differently, especially for irrelevant or even harmful projects. It's noteworthy that the uncontrolled flow of aid always runs the danger of being consumed rather than invested, lining up the pockets of individuals instead of landing in the public treasury. When this happens, and it often does, no sanction is imposed, no punishment is inflicted. More subsidies means more corruption. One of the gloomiest aspects of this aid fiasco is that donors, politicians, governments, academics, economists and specialists all know deep within themselves that aid does not work, that it never has and it never will. In his comment on some assistance action, the Director of Government Economic Services at the UK Ministry for Trade and Investment made this remark: "They know it is pure hot air but it sells their T-shirts." Welcome to the real world!

Countless studies and reports (often carried out by donor countries) showed that, after several decades, and after billions of dollars spent, aid had not had any appreciable impact on development. Examples: Clemens in 2004 recognized that there was no sustainable impact of aid on growth, Hadjmichael (1995) and Reichel (1995) found a negative relationship between aid and savings, Boone (1996) concluded that aid had financed consumption rather than investment. On the other hand it was demonstrated that foreign aid had increased public spending and unproductive consumption, and failed to promote investment. Even a cursory glance at the available data suffices to suggest that, while aid has soared over time, growth in Africa has been declining and has been accompanied by a more accentuated poverty. Over the last thirty years the most aid-dependent countries can boast an average annual growth rate of less than 0.2%. For the majority of these countries the direct consequence of aid was tailspinning into poverty. While before the 1970s most economic indicators were on the rise, a decade later Zambia was economically ruined. Bill Easterly, professor at New York University and former economist at the World Bank, notes that if Zambia had converted all the aid received since 1960 into investments and had relied on market growth, it would have had in early 1990s a per capita GNP of around 20,000 dollars. Instead, Zambia GNP was lower than in 1960 and was less than 500 dollars per capita! In fact, it should be thirty times higher than it is today. Between 1990 and 1998 aid to Africa skyrocketed from 11 to 66%, a staggering progression, only to see about 600 million Africans controversially trapped in poverty. The case against aid stands on firm ground, it is so persuasive that even the IMF which plays a leading role in this area warned the fervent supporters who pin high hopes on aid and see in it the instrument of a development it cannot eventually stimulate. The IMF also recommended that governments, donors and organizers of various campaigns be more modest in their statements and not pretend that increased aid would solve the problems of Africa. We would like that this moderation be the prelude to real change. The most mind-boggling aspect of this issue is that there is no other area of human activity, be it business or politics, where one would not think to change course and would persevere in error in spite of compelling evidence of utter failure. Such is the status quo: sixty years, over one trillion dollars spent on aid to Africa and a result that is more than modest. If aid was just harmless, if it just did not do what it had claimed to do, this paper would not have been written. The problem is that it is not harmless, it is evil. It is not part of the potential solution, it is part of the issue. In fact, aid is the issue.

4. CONCLUSION

Whether at a national or international level, aid aims primarily at helping the alleged "donors" to maintain the devices that perpetuate their positions of power and social privileges, while depriving the poor of their own means to fight against poverty. For the poor, this aid embodies the logic of an economy which not only commits all humans to often harmful external donations that are beyond their control, but also which destroys the great human and social balances that the vernacular lifestyle of the poor had created to help them confront necessity. The social system this economy seeks to establish in lieu may lead to the perpetual "quarantining" of many people and the dislocation or even the implosion of their societies. It institutionalizes a form of secular charity that transforms the beneficiaries into permanent aid-dependents, thus more and more dependent on a system of needs that corrupts both body and soul alike. We easily understand now why the promoters of major international meetings regularly held in favor of helping the poor - one of them which gathered Heads of States in March 2002 at Monterrey, Mexico, - carefully avoided any debate on the root causes of the production of misery and injustice. In fact, they are well aware that a careful examination of these cases would unveil the fraud perpetrated today worldwide under the brand of aid. Indeed, such a debate risks to disclose the perverse collusions, often structural, which, always in the name of aid, unify the leaders of the North and the South against their own "subjects".

And when, for the sake of propaganda, the Northern "generous donors" threaten to reduce their "aid" on the grounds that the recipient governments are corrupt, this examination would eventually reveal all the machinery set up by these same donors to "help" these "rogue" governments rule over their own populations. Finally, a serious investigation of the underlying reasons for these maneuvers would demonstrate to the world opinion that the most of the aid destined to eligible poor countries is intended whether to strengthen military and coercive programs or to restructure their economies to be adapted to the requirements of the sole global market. Hence this bitter conclusion: what we insist on calling aid is but an expense to strengthen the structures that generate misery. However, the victims who are stripped of their real properties are never assisted since they seek to stand out from the global productive system in order to find alternatives in concert with their own aspirations.

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SOCIAL DEVELOPMENT AND THE CONTRIBUTION OF SCIENCE

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ABSTRACT

The definition of social efficiency and social technology is the basis of evaluation methods and models, taking into account the wide range of objective and subjective factors. The methods for evaluating the effectiveness of social programs (projects) are related to the orientation of the social system towards social protection and social services of the population and the use of the process approach and the transition to program-target methods, outlining basic problems, mechanisms for social services and tasks for measurement, defining the basic requirements for evaluating the effectiveness of social programming and the different stages. Considering all these questions, the study proposes a model for evaluating the effectiveness of social programming based on the approach of "organizational effectiveness", covering the set of certain elements - a system for acquiring resources, choosing goals, assessing the impact of the external environment, choosing a strategy, respecting the "what-if" principle and priorities in social activity resulting from dynamic changes in the social environment. Special emphasis is placed on the differentiated effect on higher education institutions, depending on the area in which they carry out teaching and research activities, as well as on the peculiarities of the university business model in the changing environment for the development of higher education institutions.

Keywords: *Social Programming, Development, Social Economy, Social efficiency, Science, Indicators, Measurement*

1. INTRODUCTION

Speaking of efficiency, as a key concept for any socio-economic activity, the emphasis is traditionally placed on economic efficiency, the manifestation of which is in the dependence on "costs-effects (benefits)". And since every public activity is carried out with increasingly limited resources, the approach should be like an economic activity. Moreover, it is considered as such "any purposeful activity in which limited resources are allocated and combined between alternatives, while it is possible to maximize the effect or minimize costs" (Stankevich, 1998). The ratio between the costs and benefits of a given resource or combination of resources to reach a given, predefined goal comes to the fore, and on this basis, the rationalization of management decisions. In this sense, the cost-effect relationship can be used as a "planning method; a decision-making tool and environment for historical documentation of decisions made" (Semerdzhiev, 2007). This fundamental principle characterizing economic efficiency is one aspect of studying business efficiency. But every activity is by its nature social and determines the need for measurability of social effects. On this basis, in recent years there has been more and more talk about the so-called social efficiency. Unlike economics, social efficiency is not so direct, it is a more complex category and it is difficult to give one-dimensional expression (Terziev, 2014).

2. MEASURING SOCIAL EFFECTIVENESS

In foreign research practice, a certain amount of experience has been gained in the measurement of social effectiveness within the framework of the predictive assessment of the social consequences of scientific and technical projects, and economic and social programs. Thus, in the United States of America, at the beginning of the seventies, an independent direction of research was built in the field of "social impact assessment" (SIA-Social Impact Assessment), or more precisely, the integral social consequences of the implementation of various projects and programs for development. The business and political circles in the USA realize that every technological breakthrough brings "unplanned" losses of an ecological, social, and psychological nature, which eventually turn into an indirect economic loss. In the field of scientific and technical development, both at the level of companies and at the level of national programs, the entire methodology for planning and management is being restructured. If earlier it was oriented only towards the purely economic criteria for efficiency, now the social, psychological, and other consequences in the implementation of the scientific and technical projects are starting to be taken into account, already at the stage of adopting a decision for their development and implementation. Thus, there is a need for a complex assessment of the various categories of impact of technique and technology on society (Social management theory, 1996a). The evaluation of the social impact of the scientific and technical projects and programs in the United States of America became an independent direction after, with the Environmental Policy Act in 1969, the mandatory procedure for evaluating their environmental impacts was created (Social management theory, 1996a). All state projects that may have a significant impact on the environment, as well as projects of private companies and enterprises requiring a special state sanction, are subject to environmental expertise. An impressive example of the use of increased environmental requirements in the implementation of economic development programs in the United States of America is the organization of the development and implementation of the oil pipeline project through Alaska in the mid-seventies (Social management theory, 1996a). Project planning was carried out throughout the period of construction, operation, and dismantling of the oil pipeline after the field was exhausted. It should be noted that the entire complex multi-level program management mechanism is formed and functions on the basis of the economic law in force in the United States of America and special legislative decrees and agreements. This determines the specificity of the form of this management mechanism, in which its separate parts and elements, represented by state bodies, owner companies, and specialized firms, are connected to each other in a single organizational system of bilateral and multilateral agreements and contracts. From the standpoint of the nation's long-term interests, the project is recognized as highly effective and correct. For a long time, the very formulation of the problem of social efficiency was considered debatable in sociology and economics. To date, no unambiguous and generally accepted definition of the concept of "social efficiency" has been established. There are quite a lot of studies of a different nature, in which the authors try to study the social effectiveness of various types of activities, including managerial ones. First of all, most authors develop the concept of social efficiency, the criteria, and methods for its evaluation against the goals of social production. The monograph of the Bulgarian scientist M. Markov can be considered a classic work on the problem of social efficiency. According to him, effective is what leads to a result, to an effect (in Latin effectus - action, performance, and afficio - I act, perform) - effective, that is, effective (Markov, 1982). A popular model for evaluating efficiency is the dependence on "resources-costs-result", whose characteristic feature is the separation of the role of resource provision and the costs of increasing efficiency from management activity.

In R. Likert's model for effective organization, the following three factors are defined (Turner, 1985; Theory and methodology of social work, 1996b):

- 1) Internal organizational factors, including the formal structure of an organization, the economic structure and social policy, the professional and qualification composition of the staff;
- 2) Intermediate variables such as human resources, organizational climate, decision-making methods, level of trust in management, means of stimulation, and motivation for activity; Outcome variables, such as growth or decline in labor productivity and income, degree of satisfaction, consumer demand, etc.

In such an approach, efficiency is born as a result of a complex interaction between various factors, among which human and socio-ecological factors occupy a dominant position. Attention is also paid to the approach according to which effectiveness is assessed by the degree of protection of the balanced interests of the state and society. The work of the state apparatus can be recognized as effective only in this case if it successfully solves the problem of optimal protection of the interests of the population, social groups, and every person. In this dual task, the most important aspect is the concept of efficiency of the state apparatus. According to this approach, effectiveness is expressed in the expansion of opportunities for active civic life of every citizen, of society and the effectiveness of the state. It is determined by a well-functioning system of activity of the state bodies, by their ability to lawfully implement the state interests, to implement the state policy for social and public development. Another point of view is that which links the efficiency of state activity with the presence or absence of an optimal paradigm for administrative-political management. It is about the opposition of the traditional technocratic political management paradigm to the new - participatory one. In general, the authors directly connect the effectiveness of state activity with the presence of a bureaucracy that actually serves society (Social management theory, 1996a, Turner, 1985; Theory and methodology of social work, 1996b). This is the bureaucracy, which: is under the real control of society; expresses the interests of social progress; and is minimal in its quantitative and qualitative parameters. This claim is based on the internal contradiction of the bureaucracy between the broad public goals for which it was created and its narrow corporate interests tending to dominate. According to the opinion of some authors, the criteria for the effectiveness of social management are concluded in the following:

- 1) In the degree of conformity of the directions, content, and results of the activity of the management structures and of those parameters thereof, which are determined by the functions and status;
- 2) In the legality of decisions and actions corresponding to management structures and users (recipients, beneficiaries);
- 3) In the reality of the influence of management activity on the state and development of management objects;
- 4) In the depth of reporting and expression in management decisions and actions on the specific and complex needs, interests, and goals of people;
- 5) In the nature and volume of direct and "reverse" relations with the beneficiaries, or in other words - in the democratization of the activity;
- 6) In the degree of authority of the decisions and actions of the management structures;
- 7) In the veracity and appropriateness of information transmitted to management structures and beneficiaries;
- 8) Influence of the management activity in relation to the external environment.

Any action, social phenomenon, or quality, including social efficiency, are characterized by quantitative and qualitative aspects.

And although these two sides of the object exist in an inseparable unity and interrelationship, they are still different characteristics of the social reality surrounding us. In the scientific literature, it is accepted that the qualitative side of the obtained result (effect) is indicated by the term “criterion”, and the quantitative side by the term “performance indicator”. In other studies, a slightly different interpretation of the term “criterion for social effectiveness” is offered, considering it from the point of view of the relationship between the quantitative and qualitative determination of the studied and evaluated object. On the quantitative side, the criterion appears as a method, tool, and reference measure for movement towards the desired result, and on the qualitative side, as an opportunity to separate “positive sides, forms of this movement in space and time”. Despite all the differences in the understanding of the term “criterion” in the indicated approaches, a semantic unity is observed. Moreover, their synthesis gives us a new, deeper understanding of the social nature of social efficiency. Thus, the “performance indicator” (quantitative criterion) fixes the objectified and integral, mainly quantitatively expressed (for example, from the point of view of the natural volume of social goods and the time interval for their provision) assessment of the achievements of the social system of each rank. The “criterion of effectiveness” (the qualitative criterion) is more focused on the study of the internal mechanisms for achieving the given result, including the degree of limitation and the so-called activation of the human factor, as a condition for self-development, effective activity, the social cost of what has been achieved, the degree of its limitation, etc. This distinction is essential and important for the development of the social activity assessment system. In whatever magnitude the effectiveness of the functioning and developing social system is expressed, it is always the result of the actions of all factors of the system in their totality, presented as integrative effectiveness. At the same time, it is important to emphasize that no matter how extraordinarily effective the activity of individual factors in the social system may be, its high efficiency can only be ensured by the corresponding quality of systemic social interaction. It originates as its irrevocable organic property and serves as a general algorithm and a universal motivational mechanism for activity for all factors in the given system. The relationship between economic and social efficiency is complex. The growth of economic efficiency is usually based on the following methodological principle, according to which the implementation of the social program in itself must become a catalyst for effective economic development. The funds spent by society to satisfy social needs are eventually returned in the form of an increase in social and labor activity. In this system, the implementation of social management ultimately appears as one of the subordinate factors for achieving economic efficiency. The attempt in an analogous way to consider the impact of the economic factor in reaching integral social efficiency inevitably suffers from a simplistic approach. It is already recognized as completely obvious that with a certain essence of social efficiency, the classic criterion (the “cost-profit” ratio) is clearly insufficient. Another approach is needed, with the help of which the effectiveness of one or other social actions could be evaluated. The degree of achievement of social effectiveness is determined by the position of movement towards a socially significant strategic goal, which is meaningfully revealed as a state of maximally complete realization of man's needs and the self-realization of his essential powers, in other words, his personality. Human well-being, as the highest value for society, becomes an end in itself for social development. Hence, the projective goal of any development usually arises as a requirement to determine the complete well-being and free all-round development of all members of society, the realization of which is primarily in the creation of human-worthy conditions for life and creativity. In doing so, it is necessary to make a number of important methodological clarifications. The notion of social efficiency as performance, evaluated from the positions of approaching the socially significant goal, must necessarily relate to the changes corresponding to the general line of progressive development of the social system, i.e. with her gradual transition from less to more perfect existence.

We can note that before comparing each achieved social result with the costs, it is necessary to clarify the significance of the very fact of reaching this result, first of all from the point of view of its compliance with the goals of social development. It is also important to consider the time interval needed to achieve the set goal. The importance of this clarification for the understanding of the basic principle of social efficiency and its criteria, expressively emphasizes the specific experience of social policy. The American scientist D. Rothblatt emphasizes that in the United States of America in the thirties, a fundamental rethinking of the principle of effective social policy was done (Terner, 1985; Theory and methodology of social work, 1996b). The government's measures to expand unemployment insurance funds and increase the number of welfare recipients, which were initially seen as completely progressive, in the long run increasingly show their ineffectiveness, insofar as they have little impact on the improvement of human resources. Experience has shown that "providing well-being without offering viable alternatives" for human development and initiative becomes a brake on social development, insofar as it generates "reproduction of the culture of poverty from generation to generation". Obviously, to the same extent that the time element allows to more precisely reveal the main line of social development, the evaluation of the social activity of the activities carried out can be radically changed. So let's say that it is more effective to include people in need of social support in the labor process, bringing a promising result both from an economic and a social hunger point, than to give aid aimed at short-term "smoothing" of social tensions in society. Examining the problem of social efficiency depending on the notions of social development and its ideal gives rise to additional difficulties. In those cases when the social effect is difficult to measure quantitatively, the only reliable criterion for its evaluation can only serve the degree of approaching the goal, to the realization of those values that are foreseen by it. In a number of works, the substantive side of the concepts of social effect and social effectiveness is considered. As a rule, the authors of publications agree that the social effect is a certain social result, a purposeful activity carried out in life by economic decisions. Moreover, in some cases it is understood as "something related to human development" which "forms new features in the image of life and activity, both individual and collective, testifies to an increase in social activity, supports all-round development of personality and the formation of a new type of worker". In another case, it is treated as a "result meeting the objectives of social development". In the third case, as "the degree of increasing the socio-psychological or sanitary-hygienic comfort of the person". In the latter cases, in fact, it is not the social result as such that is meant, but the efficiency, i.e. the ratio between the result and the goal, the initial and subsequent state of social comfort (Social management theory, 1996a; Terner, 1985). The proposed definitions make it possible to capture the essential differences between the concepts of "social effect" and "social effectiveness". The first reflects a finding of reaching certain, quantitatively or qualitatively evaluable results of social activity in an independent sense. In the second case, there is a correlation of these results with the measure or degree of realization of the normatively set goal or ideal for social development. This measure of evaluation of social effect, in turn, serves as an important indication of this qualitative side of social activity integrated into its systemic organization. Thanks to the same, social efficiency itself is achieved. This inherent efficiency of social activity - the constitutive quality characteristic - can be defined as a principle of social efficiency. It is directly related to the criteria of social efficiency, as specific qualitative signs and determinants of meanings, on the basis of which, as a kind of "zero reporting points", social activity is evaluated as effective or ineffective. Looking at the signs distinguishing social efficiency from the result, they relate it either to the goals or to the needs. It should be noted that "the most effective, other things being equal, will be an activity in which the goal maximally depicts human needs." Along with this, the question of the specific social results (effects) of its managerial impact is not raised, although it is presented in the given context as very essential.

The thing is that the examination of the issue of assessment of social effectiveness and the very content of this concept is inseparable from the specific analysis of both the normatively or ideologically set goals of social development, as well as the needs (expectations, interests, ideals) of the various social subjects. It seems that social efficiency cannot be thought of in the categories of an abstract social good or only in terms of the movement of the social system towards some extremely generalized goal of social development. The social object and this is the object of management, to which the concept of social efficiency refers, is sufficiently complex in its structure. It encompasses the entire set of social relationships and relationships existing in society. The very goals of social management inevitably affect the entire "space" of these connections and relations, including the social system (society) as a whole, social groups (communities), and individual individuals (personalities). Based on this and the effectiveness of the social management activity, one should think in the overall assessment of the development of all countries, aspects, and components of the social system. It is obvious that the above-considered correlation of effective social activity with the goals of social progress indicates one of the important moments of social connection and interdependence between the system-wide, social-group, and individual-personal dimensions of social activity, of the aggregate and, as a rule, long-lasting nature of its manifestation. Examining the issue of the socio-economic efficiency of the targeted complex programs, it was found that "the main purpose of calculations and the assessment of social efficiency within the framework of the program-target method is the justification of the adopted planning and management decisions" (Terziev, 2013). Taking into account the need to predict the social consequences of economic activities, which must be considered in the general assessment of their effectiveness, several authors note that for this "the persistent quantitative or (albeit sequential) dependencies between production-technical and social changes, between the characteristics of the targeted events and indicators reflecting the corresponding target norms" (Fundamentals of modern social management, 1999; Fundamentals of modern social management: theory and methodology, 2000). Some authors link the social efficiency of the economy with the problem of efficiency. In economics and sociology, even the question of the legality of this concept, such as "social efficiency" (as opposed to the more or less clear economic maximum production at minimum costs) is debatable. Those scholars who consider this concept legitimate try to give it a more specific definition. In particular, the criterion of social efficiency is the degree to which ripe social problems can be solved in minimum terms and at minimum costs to society. The given definition is debatable because the development of a criterion for optimality in the social sphere would significantly advance the understanding of the criterion of social efficiency, whatever final formulation this concept receives (Fundamentals of modern social management, 1999; Fundamentals of modern social management: theory and methodology, 2000). Posing the question of the optimality of social activity as an integral criterion for its effectiveness is promising precisely because of the complexity of each social object, its dependence on multiple variables, and also the presence of multi-vector internal system contradictions. We should bear in mind that optimization in the mathematical theory of optimal processes is called the process of choosing the best option from the possible ones, bringing the system, the object, to the best possible (optimal) state, a process in which it is maximized the quantitative characteristic of the most desirable property of the object and vice versa, the most undesirable is minimized. The issue of optimality criteria (the optimum) is an important theoretical result for the optimization of the national economy. In the most general form, the criteria for optimality in economics are defined as particular economic and mathematical models expressing public attitudes. In other words, they are a special type of formalization of the goals of economic development in the form of an analytical and, in this sense, a priori set function. The problem of the ratio of optimality and efficiency problems is also debatable. One group of economists actually equates them, while others try to separate these concepts.

This is where targeted research work is needed. For now, one thing is clear: between the criteria for optimality and efficiency, there is unconditionally the closest relationship and the theoretical clarity in this regard allows us to achieve significant success in the objective assessment of the consequences of the implementation of plans, programs, projects, and decisions. It is obvious that, for example, social efficiency can be thought of narrowly pragmatically, as the best outcome in solving an urgent social problem. Within a broad social approach, the strategic and long-term consequences of the measures taken are taken into account. Certain contradictions and divergences may arise between these approaches. Under these conditions, the task of achieving overall social efficiency should be formulated primarily as a task of optimization of the social management activity. Social and economic efficiency has two aspects. Each bearer of a certain type of work is treated as part of the general, direct social work. Concerning the product of any given labor, it manifests itself as a quality or property capable of satisfying a rising need. Economic efficiency applies its criteria for evaluating the results of labor to solving the question of how much it costs us to achieve the obtained effect for social activity, and to whom and how this effect serves. Proceeding from this, it can be assumed that, unlike the criterion of economic efficiency, the criterion certifying social efficiency is not understood only within the given "closed" system of social action, rather than having an externally set normative-ideal character. This greatly complicates the assessment of the social effectiveness of each management institute, as it forces it to take into account in its field, the "internal environment" of its activity within which the performance can be correctly assessed and measured. At the same time, the measurement is exclusive to the quality of the given social-management system, as well as with the "external environment", which is not in the sphere of its control. Nevertheless, it is a task of normative goals from which the integral evaluation of social efficiency is derived. It is appropriate to emphasize the distinction and interrelation between the categories of efficiency and quality. The criterion of effectiveness is the ratio of costs and results, and the criterion of quality is the ratio between the effect and the goals, the goals and the means to achieve them. An expression of the principle of efficiency is less cost - greater result. The manifestation of the principle of quality is the highest degree of achieving the goal with rational and optimal use of the available means. It is obvious that with such consideration of the principle of social efficiency, it is taken from the standpoint of the quality of social activity, and not as a "cost-effect" ratio. The problems of the social efficiency of the activity are considered directly in the specific management. The social consequences of management activity in the broadest sense of the word are clarified by the already mentioned American system for assessing social consequences – SIA (Social Impact Assessment - SIA). American authors include economic in the narrow sense of the word, political, cultural, and psychological impacts. From the point of view of the one who is affected, social entities and organizations are distinguished. Such are society, social groups, socio-territorial communities, and individuals. From an organizational-institutional point of view, the impacts to which the activities of management bodies, ministries, industries, and companies are subjected are analyzed (Fundamentals of modern social management, 1999; Fundamentals of modern social management: theory and methodology, 2000). From the point of view of the spatial scales of the impact, the consequences for the country, the region, the district, the municipality, the territorial unit - the population of the object of impact or the specific target group of beneficiaries are evaluated. Social impact in the narrow sense of the word means the impact on employment, the creation of new jobs, education and training, self-education, health and quality of life, communication within and between social groups, social cohesion, and social segregation. within the local territorial community. In this case, the task is to answer the questions of who gains and loses if the supposed action takes place, what these are, and how the social costs and benefits are distributed.

To assess the social effect of management decisions, it is necessary to have criteria that allow us to assign social consequences to goods or costs. In other words, the presence of certain benchmarks and value orientations is assumed. The procedure ends with the determination of what some authors call "target" and "need" efficiency, i.e. efficiency, understood in a normative-ideal dimension. The indicated experience allows us to realize several simple truths, without the consideration of which one cannot proceed to the creation of socially significant programs and projects, namely:

- 1) Before proceeding with the implementation of any management decision, it is necessary to assess its social meaning, and therefore its expediency;
Insofar as there are no universal criteria for social efficiency, each specific management decision must be accompanied by a justification of its expected social effect and defined criteria for its evaluation;
- 2) The interpretation of the social effect depends on the scale of the management decision, on the level of consideration of the subjects experiencing the impact of the innovation, on the motives and the pursued goals, and also on the time interval during which the expected result is expected to be obtained;
- 3) It is important to distinguish the social effect in the broad and narrow sense of the word, taking into account that there is a dependency between them. The justification of management decisions increases if the concept of social effect is complex and includes economic, social, psychological, socio-cultural, and other significant consequences;
- 4) Evaluating the supposed social effect, it is necessary to orient ourselves against certain value benchmarks, allowing us to thoughtfully judge the social "value", and the social "continuity of decisions". Such an assessment is possible only in the case of comparing the social effects of several alternative solutions.

The problem of the social effectiveness of management began to be actively studied in the late sixties and early seventies of the last century. Previously, it was related to the development of the theory of social management, which raises the question not only of the economic but also of the social effect of management activity. The question of the effectiveness of the management system, as the effectiveness of the activity of the subject of management or the management subsystem, is necessary to focus on the following questions: what is the contribution of the management system in solving these or those socially significant tasks? What is its contribution to the achievement of the goals facing the particular organization? The primary criterion is the degree of impact of the managed subsystem. But insofar as the management system is relatively independent and functions as a complete complex, one more set of criteria can and should be defined. It is formulated based on the primary criterion and answers the questions related to the internal state of the management system, with its ability to act with an increasing degree of efficiency. Along with the evaluation of the effectiveness of the management system in the general aspect, the effectiveness of the main components of the management can and should be determined - the functions, functional structures, and technologies. Efficiency can be considered not only as a phenomenon from the economic sphere. Moreover, it is a relatively independent social phenomenon. It is based on the consideration of the multi-level structure of elements, value criteria, and indicators. They fix the effectiveness of social programs and events, the activities of different population groups, and the social consequences of the implementation of economic, scientific, and technical projects. Social efficiency indicators are considered tools for evaluating the realization of the interests and needs of society, the state, the collective, and the individual. Effectiveness, as a social phenomenon, appears in the form of the qualitative-quantitative characteristic for maximum development of human resources, forms of social life, and management of society, taking into account the minimum social, political, economic, and moral costs.

This approach allows us to consider social efficiency as a universal approach for expressing the degree of effectiveness of positive and negative functioning in the development of social institutions and processes. At the same time, the widely understood principle of social efficiency goes beyond the limits of the given ratio, insofar as it takes into account and integrates several more important dimensions of the effectiveness of social activity. It is about its orientation towards reaching socially significant, normatively set goals for the development of the object for social management, the assessment of the consistency and the real degree of approximation to the sought public interest in the order of "self-development" of the system, the orientation towards the quality of management activity. These aspects for measuring social efficiency should naturally be reflected in the construction of the general model or principle for social efficiency. The analysis of the problem of social efficiency shows that in the process of birth and development of science, it naturally receives the necessary attention in the context of different management systems. In particular, the importance of this context should be emphasized with the system of state and local management of the social spheres of society. The public character of these systems implies their limitation in their activity for social effect and its determining quality of social effectiveness in the wide range of social needs and goals. Therefore, the social efficiency of the state management system objectively requires the application of a polymodal multiparameter approach to its measurement. The connection of the entire complex of social and effective state management with the social safety of the country as a whole, and also with each region and territory in its independence, is also essential. When defining the complex assessment of the effectiveness of social programs, it is appropriate to note the following:

- 1) The evaluation of the effectiveness of social programs should be considered in the context of quantitative and qualitative indicators: the quantitative indicator is expressed in the natural volume of social goods, as well as in the material costs for their receipt, and the qualitative indicator or criterion is reflected in the internal mechanisms the achievement of the given result, the quality of the organizational and management system, the system norms and values, the norms of law, based on which the activity in the given social system is considered effective or not;
- 2) When evaluating the programs, their economic and social efficiency should also be taken into account. Economic efficiency is expressed in the fact that the implementation of the social program in itself must become a catalyst for effective economic development. The funds spent by society to satisfy social needs must eventually be returned in the form of increased social and labor activity;
- 3) The degree of achieving social effectiveness is determined by the position of movement towards the socially significant goal, which is meaningfully revealed as a state of maximally complete realization of man's needs and self-realization of his essential powers, in other words, his personality, which is realized above all in creating human-worthy conditions for life and development.

In the case of complexity or the possibility of calculating economic efficiency, the weight in the assessment is the optimality in achieving the social effect. It should be noted that the results of the programs relate either to the goals of the program creators or to the needs of those to whom these programs are directed. To the greatest degree of effectiveness in the given case, those programs reach those programs in which the goals of the managers and organizers of the program most fully reflect the needs of the subjects of the program (Terziev, 2013).

3. MEASUREMENT OF SCIENCE, AS AN INDICATOR OF ITS SIGNIFICANCE

In recent years, a lot has been said and written about measuring science, quality, sizing in some way, and finding an element for its valuation. An interesting undertaking, both from a

professional and a research point of view. There are at least two parties to this process – those who create the science and those who will evaluate it or, more precisely, those who will consume it. So that all this does not seem rather primitive and consumerist, we should consider all this as a process that is too complex, both for its accounting and even more so for its valuation. Historically, the benefits of various scientific discoveries came quite late, even after the death of their authors. The challenges of looking for answers to questions from the point of view of usefulness, effectiveness, and efficiency are related to a definite and precise knowledge of these processes and their reflection on the entire social process in which they fall or, more precisely, are part of this social process. Perceiving science as something abstract and incomprehensible rather harms or at least does not help the process of its perception and appreciation. Various state and public institutions deal with this difficult task, including the Ministry of Education and Science in Bulgaria, which is called upon to perform this activity in accordance with its duties. In the implementation and development of various models and technologies in this direction, there are always satisfied and dissatisfied. This should in no way frighten, offend, or discourage either party. Achieving maximum justice is a strong enough motive to go in this direction of objectifying the essential processes related to scientific and research activities. Moreover, it has been proven in life that progress is related to scientific discoveries and they are part of human development. Very often we take things quite pragmatically from our point of view, contenting ourselves with the explanation that they are still going well or are acceptable enough for the community to which they relate. This acceptable way may be relatively good for a certain period of time, but it is by no means acceptable and progressive for the development of these processes. The concept of “process” is complex enough in the sense that we use it because, on the one hand, it has a long duration in terms of time and has a complex of characteristic features, complexity, and even contradictions. It must be considered, defined, and even understood both by all participants in the process and, above all by those who will consume the results of this process, i.e. society. The opposite will be a self-serving game of science and will bring satisfaction to man for himself without benefiting others. You will agree that the main benefit in this direction is the applicability of everything that scientists and researchers do. Historically, this has been repeated enough times over the years, and in quite a few cases, scientific discoveries have been accepted and evaluated in a much later period of time, after their realization. Acceptance or denial of certain results of scientific activity requires understanding, feeling, or approval by society. This is not always an easy and achievable task from any point of view. Usually, scientific discoveries, research, or developments are published in specialized publications that are accessible to a limited circle of users who are engaged in this activity or these publications are not public enough, i.e. have limited access or in most cases this access is paid for. This further complicates the process of approval or acceptance of these circumstances. The imposed need for scientific developments to be published in refereed editions, i.e. those that contain scientific information of high value, has turned them into publications of a closed nature or limited availability of the published information. This is also understandable, considering the efforts and work of the respective teams or specific researchers to receive feedback for their efforts and to be evaluated in an appropriate and sufficiently acceptable way. On the other hand, the work of scientists must reach a larger community, because it is practically the potential user of their work. This forces, or perhaps the correct word obliges, scientists and researchers, to present their theses, developments, and discoveries in various forums to reach the user as quickly as possible through various information channels. Explained in this way, it sounds rather simplistic, but it is relatively true. A study is sometimes presented, advertised, and displayed at dozens of scientific conferences, roundtables, symposia, and trade shows, and becomes a complex, difficult, and lengthy validation process.

The resistance from the scientific community in such cases is very serious because the search for non-traditional approaches in the validation of scientific research violates the generally accepted framework of slowness and closedness of the academic community. This "irritates" the scientific community, which is quite introverted and even rigid in its understanding of the promotion of scientific works. It is our understanding that almost all presentation options are acceptable as long as they produce a good result and provide reliable and true feedback and useful information in this direction. The relationship between the authors of scientific research and development and users should be more than warm and sincere, to establish in a sufficiently accurate and correct way gaps, negatives, or imperfections. The changes in the Law on the Development of the Academic Staff and the Rules of its Application in Bulgaria try to find an answer to these questions by trying to create a system of criteria that is measurable for the relevant field of higher education and professional direction. This system is served by the National Center for Information and Documents at the Ministry of Education and Science of Bulgaria. Whether the quantitative measures that are embedded in this model can provide the necessary qualitative coverage is difficult to say and rather the answer is negative. Despite everything, this system creates a certain order and visibility of the results, but for objectivity, it is difficult to even think in this direction. Especially considering that different assessment and eligibility systems and requirements have been in place at different times. Meeting certain criteria to date sometimes makes it impossible for some scholars and researchers to present adequate information, with an additional difficulty presented by paper-based information from older time periods that cannot be ignored or denied. This does not detract from the efforts being made in this direction to introduce uniform or more precisely measurable requirements to be taken into account in the habilitation procedures for associate professor and professor, as well as for the educational and scientific degree "doctor" and the scientific degree "Doctor of Science". Naturally, they are differentiated according to certain criteria, with the relative weight being placed in several main directions: articles and reports published in scientific publications, referenced and indexed in world-famous databases with scientific information; articles and reports published in non-refereed peer-reviewed journals or published in edited collective volumes; citations in peer-reviewed monographs and collective volumes; citations or reviews in non-refereed peer-reviewed journals; supervision of a successfully defended doctoral student; a published university textbook or a textbook that is used in the school network, etc. Here, particular importance is given to publications that are in the referenced systems of Web of Science and Scopus. It is believed that the requirements for such editions are high enough and the evaluation of the published works is high. This, of course, is a matter of perception by the relevant evaluation body as one of the main criteria in determining the quality of the scientific activity of the individual himself and of the institution as a whole. All this directly corresponds to different rating systems, which take into account certain articles in certain editions and rank the institution according to these indicators, including citations of these scientific reports, articles, or announcements. This seems quite acceptable and adequate as an assessment technology, but the result does not always correspond to the reality of the state of the relevant scientific and research institution. Such an assessment is also made in Bulgaria and at the end of each year, the results of the previous year are presented. The time of assessment was chosen non-randomly. The indexing of relevant publications in the two main systems is a lengthy period, in some cases lasting more than a year. Sometimes in these cases, there is a possibility that part of the publication activity of scientists and researchers is not correctly and accurately reported. In some of the higher schools, progress is due to one or more scientists who have formed a team and established themselves in the community and are free to publish in this type of scientific journal.

This in a certain way distorts the information that is presented and leads to quantitative accumulations that do not correspond to the overall assessment of the institution. In some cases, if we exclude these few scientists from the composition of the relevant higher school, the data that will be obtained is insignificant. The created Rating system of higher education institutions in Bulgaria uses a methodology that is based on a system of indicators. The main information in the rating system is represented by a set of indicators. These indicators were formed as a result of collected statistical information from centralized registers and surveys conducted among students, teachers, and administrative and managerial staff in higher education institutions, as well as among employers who hire personnel with higher education. The indicators are divided into 6 thematic groups according to the main categories by which higher schools are evaluated. These groups are: Learning process; Research; Learning environment; Social and household and administrative services; Prestige; Labor market realization and regional relevance. There are two main types of indicators in the rating system - rating and informational. Rating indicators are those that can be used to form rankings of higher education institutions in a given professional direction. Information indicators provide information about a given higher education institution and its professional fields but are not used to create rankings. For example, the indicator "Number of students in professional direction" is informative. It can serve for comparisons and provide additional information about a given higher education institution in a given professional field, but it cannot participate in the formation of rankings, since the presence of a larger or smaller number of students in itself is not an indication of the presence of a higher or lower quality of the education provided. The rating system contains indicators summarized at three different levels: Professional direction in the relevant higher education institution; Professional direction at the national level; and High school. Some indicators are available in the system at all three levels, others - at two of them, and others - exist only at one level, depending on the cognitive meaning of each of the indicators. The indicators, which are calculated for higher education institutions as a whole and participate in some kind of ranking of higher education institutions by professional fields, have the same value for all fields in the higher education institution. The indicators calculated for the professional fields in a national plan are not used in the formation of rankings, but they can be used to make comparisons between the different fields in the Bulgarian higher education system as a whole (but not between the different higher schools within the same field). These indicators carry aggregated information at the professional level and can be used for further comparisons and analyses. They can be viewed in the "Comparisons" section of the system's website. Until 2015, two criteria were used for weighing the data obtained from the sociological survey among employers from the respective administrative area in which the respective employer is located and the number of persons employed by the respective employer according to data from the National Social Security Institute. For the 2018 edition, two data weighting criteria have been used again - the administrative area in which the relevant employer is located and the economic activity code (according to data specified in the survey) according to the Classification of Economic Activities 2008. For the 2019 edition d. when preparing the weights, in addition to the "administrative area" and "code of economic activity" criteria, a third criterion was added - the number of employees, obtained from data from the sociological survey conducted among employers in June-July 2019. When preparing the weights for the 2020 edition of the Rating System used the same three criteria as in 2019. No sociological research was conducted in 2023. For the standardized rankings, the most up-to-date available data was used, i.e. those from the 2020 edition of the Rating System. Changes in the methodology and the addition of new or removal of existing indicators may have a partial impact on the standardized rankings, and this should be taken into account when interpreting the changes in the positions of various higher education institutions in this type of rankings in the different editions of the rating system.

When implementing the Rating System in Bulgaria, the goal is to achieve relative stability of the selected indicators in the standardized rankings and their sustainable use in the future without further significant changes. However, it also depends on the feedback that is received from the academic community, educational experts, and other stakeholders, as well as on the identification of new opportunities to increase the scope of the cognitive potential of the system. A large part of the changes that have occurred over the years in the various editions of the Rating System are motivated by the desire for its improvement and expansion of its scope, as well as in response to received recommendations from higher schools and other interested parties. Information about the indicators and the weight with which each of them participates in the formation of a selected standardized ranking can be found by selecting "Show indicators" in the corresponding standardized ranking for the relevant year on the web platform of the Rating System at <https://rsvu.mon.bg/> (2024a). When preparing the Rating System of Higher Education Institutions, indicators were used in different measurement units (number, scale rating, percentage, BGN, etc.). Therefore, it is necessary to unify their values by a statistical procedure called "standardized z-scores", which brings them to the same scale and at the same time preserves the order and proportions between them. Standardization is performed using a classical method that uses an arithmetic mean and a standard deviation. The calculation goes through the following basic steps:

- 1) Arithmetic average values are calculated - for each of the indicators, the arithmetic average is calculated for the entire studied population in total - *mean_{gr}*.

Dispersions are calculated for each of the indicators:

$$\sigma_{gr} = \frac{1}{N-1} \sum_i (x_i - \text{mean}_{gr})^2,$$

- 2) where *i* moves according to the number of units in the studied population, and the total number of units in it is denoted by *N*. This quantity shows how different, on average, individual cases are from their average size.
- 3) Standardized points are calculated:

$$z_i^{gr} = \frac{(x_i - \text{mean}_{av}^{gr})}{\sqrt{\sigma_{gr}}}$$

with this procedure, the distribution of the indicator values is translated and an average is obtained 0 and variance 1 (within the studied population), while the order and proportions between the values of the individual units are preserved.

To convert the standardized points to points between 0 and 100, another transformation is done:
 $Z_i = * 20 + 50 i$

At values less than 0 and greater than 100, i.e. those differing from the mean by more than 2.5 standard deviations are given values of 0 and 100, respectively. In the rankings, the final grade for each institution of higher education is presented as a score on a scale from 0 to 100. Since the 2013 editions of the Ranking System, there have been changes in the aggregates used, based on which the z-scores are calculated. To avoid instability arising from the use of small populations, the entire population of study units is used in the calculation of z-scores.

For example, if the indicator is based on subject-level data, the z-scores are calculated using all values for all subjects in all higher education institutions. This means that the base on which the z-scores are calculated in this case includes over 300 values. Each rating system has its limitations. This one is no exception. These limitations must be taken into account when considering the information part of the system and when analyzing the results of the different rankings because they can have an impact on the cognitive characteristics of the information in the rating system. In cases where the data collected for a higher education institution in a given professional field is not sufficient to allow its ranking in comparison with other higher education institutions in the same professional field, the corresponding higher education institution in the relevant professional field is excluded from this ranking. In these cases, the data on the individual indicators for the out-of-ranking for the relevant higher education institution are available to users, but this higher education institution is not included in the standardized rankings for the relevant professional field. The grounds for placing a higher education institution in a given professional field outside the ranking may be related to the lack of a sufficiently large number of persons who graduated in the last 5 years, among students in the relevant professional fields in the respective higher schools, with denied or expired accreditation, as well as with the lack of sufficient data in the official registers used as a source of information for the rating system. The "detachment" of scientific research from social development as a whole is also a fundamental and unimportant problem in its nature. The questions here are what is this good for, when and how will it be useful to us, or will it be useful at all. We must exclude purely theoretical developments, which in themselves have another meaning and necessity. In recent years, the Ministry of Education and Science, in connection with the implementation of the national policy related to regular monitoring and evaluation of scientific research activity (Government Gazette No. 54/29.06.2018), has made an Evaluation of the scientific research activity carried out by higher schools and scientific organizations and the "Scientific Research" fund, and later the created Rating System of Higher Schools (Terziev, 2019a; Report of the Commission to the Ministry of Education and Science (Bulgaria) for monitoring and evaluation of the research activity carried out by higher schools and scientific organizations for 2018; 2019b). The opinion of Celia Luterbacher from Switzerland is interesting, and she makes interesting interpretations in this direction. She says that in the scientific international community, there is a ruthless principle "I publish, therefore I exist". In this direction, the thoughts are that special importance is given to the quantitative measures that take into account the number of publications and their references. In Switzerland, a reform is being prepared, which is related to a change in this direction. "In recent years, quantitative indicators are increasingly used at the expense of qualitative ones, and so there is practically no way to motivate scientists, not to mention that this process can lower the quality of scientific research. All this should be linked to a change in the national strategy, which takes into account the diverse disciplinary and institutional requirements, applying differentiated assessment practices". The most serious problem turns out to be the creation of a relatively good system of indicators and evaluation criteria that would provide accurate and reliable information about the state of scientific research and the overall state of higher education and research institutions. Mathematical interpretation would be a far easier problem and doable quickly if we could find the most accurate and measurable indicators. The main problems are outlined in several main directions.

3.1. Building a sustainable and effective relationship between higher education institutions and the labor market

In connection with the implementation of Contract No. D03-26/23.07.2020. with subject: "Performance of analytical activities based on the annual results of the Rating System of Higher Education Institutions in the Republic of Bulgaria" under project BG05M2OP001-2.005-0001

“Maintenance and improvement of the developed rating system of higher education institutions - phase 1”, financed under the Operational Program “Science and Education for Smart Growth” 2014-2020, between the Ministry of Education and Science and “Global Metrics” EOOD, the following problems and proposals are defined. The quantitative expression of mismatches between demand and supply can be presented for several key areas where we have the opportunity to trace emerging imbalances at the national level in the horizon up to 2027:

- 1) Specialists with a pedagogical profile are expected to be in the first place with the greatest shortage by 2027. The main factors that influence the shortage of this type of specialist are aging of the teaching staff and a higher share than the national average of teaching specialists who are of pre-retirement age; the smaller number of graduating specialists (on an annual basis) compared to the needs of the educational system; still a high share of specialists graduating from pedagogical specialties who are employed in positions that do not require higher education (on average between 42 and 58% in different higher education institutions do not work in positions that require higher education). A reserve of specialists in this professional field are both graduates who are employed in other positions, Bulgarians who live abroad, and specialists from practice (especially for teachers in secondary vocational schools);
- 2) In the next place the greatest discrepancy between the real needs of the sector and the specialists graduating on an annual basis will be the sectors of human health care and medico-social care with accommodation and social work without accommodation. The shortage on an annual basis is expected to be around 2,000 specialists (from all professional fields related to these two sectors). There is a reserve in this direction among the graduates of the professional fields of “health care” and “public health”, where the share of persons employed in positions that do not require higher education varies between 13 and 30% in the individual higher schools for the professional field of “health care” and between 11 and 41% for the professional field of “public health”. Reserves among graduates of dentistry, pharmacy, and medicine are almost non-existent, as they occupy positions that require higher education;
- 3) The next sectors in which a clear shortage is emerging are activities in the field of information technology and information services and the production sectors related to engineering activities. A reserve for this type of specialist is again the persons working in positions that do not require higher education. Despite the demand for this specialty on the labor market, in all higher education institutions outside of Sofia, the share of graduates in “information technologies and information services” majors who occupy a position for which higher education is not required varies between 42 and 65%. The share of engineering graduates occupying positions for which higher education is not required is similar (58%). This shows that, in addition to territorial imbalances, there are also imbalances in the quality of training and acquired skills, which do not allow graduates to realize themselves in more attractive positions, despite the shortage of personnel in these sectors.

The needs of high-tech industries and knowledge-intensive services from personnel with higher education in specific professional areas outline the role of pedagogics, humanities, social sciences, economics, and law for sectors dominated by public participation, such as education, health, and public administration. The role of business sciences can also be traced to the manufacturing industry and the service sector. The importance of the so-called STEM professional fields in almost all spheres of the economy. To overcome these imbalances, it is necessary to:

- 1) To improve the quality of secondary professional education, so that it is not necessary to hire persons who have completed a bachelor's or master's degree in positions that do not require higher education;

- 2) To improve the quality of secondary education in other fields in the country (language, science, mathematics, etc.) to meet the necessary standards for a full and qualitative continuation of education in the next levels of education;
- 3) To develop learning skills, including the attitude of lifelong learning, which will give flexible adaptation of graduates of higher education to different fields and activities, including adaptation to rapidly changing working conditions;
- 4) To develop STEM skills and the conditions for teaching subjects from the group of natural sciences, mathematics, and informatics in secondary education, to create better prerequisites for training and professional development of a wide range of professional areas, to which currently there is little interest in the growing demand and needs of the labor market;
- 5) To create more flexible forms of training and interdisciplinary programs (especially in the initial years of training) to enable the development of a mix of skills relevant to the future labor market. Among them, in addition to specific professional skills, are also important for employers skills for learning new knowledge and skills, self-organization, discipline, teamwork, communication skills, initiative and entrepreneurship, working with information, writing text, etc.;
- 6) To improve the quality of higher education in professional fields for which there is a high demand on the labor market, but also a high proportion of persons who have graduated from this professional field, who are employed in positions that do not require higher education. These imbalances give reason to assume that, despite the demand for specialists with a similar profile, despite the acquired diploma and education, the available training is not sufficient for labor mobility or realization of a position that requires higher education;
- 7) It is necessary to improve the connection between the educational content and the real needs of the labor market (not only business but also the needs of employers from the public sector), paying particular attention to joint partnership initiatives between employers and the relevant HEIs (joint projects, research, open-door days, participation of guest lecturers from practice, initiatives to "change places" with the aim of better mutual understanding and familiarization, etc.;
- 8) To improve career guidance to minimize the irrational choice of education and the waste of both public and personal resources that could be directed in other forms of personal and professional development. In this way, non-rational choice can be transformed into appropriate training for implementation purposes, which will be much more effective and less resource-intensive, including shorter duration. At the moment, 49.7% of the graduates of higher education (average value based on the realization of the graduates of all professional fields) occupy a position for which higher education is not required. An interesting additional analysis to be carried out in the future could look for an answer to the question of whether this share changes with the progression of work experience (through a study among graduates in the 10th and 15th year after their graduation), as well as what is their career, what additional training and qualifications have they received, etc.

The key professional areas identified above, from the point of view of the long-term needs of the labor market in Bulgaria, provide grounds for carrying out targeted measures for:

- 1) Stimulation of applications to Bulgarian higher education institutions by increasing the level of awareness of the labor market, the required skills, the realization of students who have graduated from Bulgarian higher education institutions, and the reputation among employers of individual higher education institutions;
- 2) Encouraging interest in the key professional fields and stimulating realization of the Bulgarian labor market with targeted information campaigns both to parents and to the representatives of a given generation of student candidates in general;

- 3) Promotion of less attractive professions among young people and implementation of an adequate income policy for employees in the budget sector;
- 4) Selection of the best candidates in these key professional areas;
- 5) Provision of scholarships - sufficient in size, subject to high success and realization of the Bulgarian/regional labor market in the medium term (e.g. five years), covering a smaller number of learners to motivate them to fully engage in the educational process and achieve high academic results;
- 6) Reducing the number of subsidized places in certain fields and/or modernizing the less attractive fields for young people (but at the same time no less needed on the labor market) in the direction of developing digital skills and working with digital applications;
- 7) Linking the subsidized study places for students with the quality of education and science in higher schools;
- 8) Stimulating the development of both narrow specialization in the identified fields and interdisciplinary specialization – for example, combining STEM fields with humanities, social and economic sciences;
- 9) Stimulation of the research and development activities of teachers in higher schools, including its implementation in practice (business, financial sector, public administration, etc.).

Of the listed specialties, those for which there is a tangible need for support from the state to overcome the long-term deficit in the labor market are the following:

- 1) Medicine and health care - the encouragement of young people to study these specialties should be supplemented with measures to increase their income level in the Bulgarian labor market. Otherwise, the intensive investment in these professional fields will not benefit the Bulgarian labor market (in other words, if the production of more medical specialists is not combined with a significant increase in their income, the Bulgarian budget will directly subsidize the health systems in the rest EU member states, to which the graduating medical specialists in our country are mainly directed; at the same time, the existing problems in our country will deepen more and more);
- 2) Pedagogy and Pedagogy of training in... - given the large number of teachers that are needed in the long term, and accordingly the large amount of funding for such training, the provision of subsidies and scholarships should be tied to the quality of education.

In all three professional areas, the social and demographic specifics of the Bulgarian population and the growing need for long-term care, improving the access of children and people with disabilities to quality education and healthcare, etc., should be taken into account. This means that special attention should be paid to all those professions which are not yet regulated and which should be regulated by the state. At the same time, the state intervenes, regulating admissions in specific specialties, and placing them in the list of priority and protected specialties. In the Law on Higher Education, protected specialties are defined as "...specialties of higher education, for the study of which there is no declared interest or the declared interest is low, but at a certain stage of the economic and social development of the Republic of Bulgaria there is a need to train highly qualified specialists for these majors."

3.2. Stimulation of research activity in higher schools and innovations oriented towards market realization

In connection with the implementation of Contract No. D03-26/23.07.2020 year with the subject: "Performance of analytical activities based on the annual results of the Rating System of Higher Education Institutions in the Republic of Bulgaria" under project BG05M2OP001-2.005-0001 "Maintenance and improvement of the developed rating system of higher schools -

phase 1", financed under the Operational Program "Science and Education for Intelligent Growth" 2014-2020, between the Ministry of Education and Science and "Global Metrics" EOOD, the following problems and proposals are defined. Based on the analysis, the following conclusions were drawn:

- 1) At the moment, a high-quality rating system of Bulgarian higher education institutions has been created, which provides rich objective information about the higher education system and which develops and adapts constantly to be in synergy with the dynamics of the environment;
- 2) Over the years, the information provided by the rating system has outlined trends that serve not only as a guide for prospective students but also as academic guides to make managerial decisions;
- 3) A serious scientific infrastructure is being created, provided with funds from the Operational Program "Science and Education for Smart Growth" and other programs - these positive changes are already showing results - the scientific output of higher schools has started to grow noticeably in recent years, as can be seen from the annual editions of the Rating System of Higher Education Institutions in the Republic of Bulgaria;
- 4) The introduced normative changes in the last two years have their a positive influence on the development of the higher education system, which is in continuous dynamics to meet and be in harmony with the highest international standards;
- 5) Acceptance and application by the National Agency for Evaluation and Accreditation of the European standards for quality assurance - the criteria for accreditation of doctoral programs provide an additional assessment regarding the quality of the teaching staff, scientific activity, competitiveness, and realization of the doctoral students;
- 6) Leader among all Bulgarian beneficiary organizations (universities, private organizations, non-governmental organizations) under the Horizon 2020 program is a higher school, which is a direct proof of the high level of scientific capacity of higher schools;
- 7) The applied scientific activity and innovations in higher schools, which would contribute to the more intensive development of the Bulgarian economy, are still lagging.

Recommendations for inclusion of additional criteria:

Since the indicators included in the Higher Education Rating System objectively measure the components of the higher education research activity, our recommendations are only to consider the possibility of including indicators aimed at their technological and innovation activity:

- 1) In the criteria for evaluating the scientific activity, one could find a place that takes into account the actual cooperation of the university with business, and that for the benefit of society and/or the economy;
- 2) Received grants for the research infrastructure above a certain threshold (not less than BGN 50,000);
- 3) Contracts with the industry above a certain threshold (for example, not less than BGN 50,000);
- 4) Level of activity in terms of funding applications (submitted applications to national and international instruments).

3.3. Modernization of the higher education management system and profile definition of higher education institutions and educational and qualification degrees

In connection with the implementation of Contract No. D03-26/23.07.2020 with the subject: "Performance of analytical activities based on the annual results of the Rating System of Higher Education Institutions in the Republic of Bulgaria" under project BG05M2OP001-2.005-0001 "Maintenance and improvement of the developed rating system of higher schools - phase 1", financed under the Operational Program "Science and Education for Intelligent Growth" 2014-

2020 between the Ministry of Education and Science and "Global Metrics" EOOD, the following problems and proposals are defined. The management of higher education can be based on different principles. The approach chosen and applied so far in Bulgaria is based on the understanding of the rational choice of students and the economic expediency of funding, linked to market criteria for efficiency: unemployment, social security income, realization of the specialty, and interests of employers. Due to structural regional inequalities in the country's economy and the labor market, due to the specifics of internal migration flows, the universities based in Sofia receive a competitive advantage in the ranking, which is not only due to the educational achievements of the respective higher schools. The practices and attitudes registered in the course of the research show that universities offer majors in fields that do not correspond to their specific profile. This is motivated by the attraction of state funding and relies on the attractiveness of these specialties for students. At the same time, however, there is a risk of lowering educational achievements and dilution, and the opportunities for generating scientific production that meets the global criteria for good academic work are reduced. In this regard, it can be recommended to rethink the weights of the rating system and revise it following global trends, namely - to comply with the goals of the millennium in education and to give greater weight and importance to the cultural specificities of the regions, as well as to gender equality. One could consider quotas and scholarships for children from poor and socially disadvantaged families in prestigious specialties with a high rate of realization and a high initial salary, as a measure to overcome poverty through education (similar to the quotas for male veterans that existed before the abolition of compulsory military service). Such measures exist at the moment, but at the moment there is a strong feminization of professions with low starting salaries, which should be overcome, it is important to provide access to this information, as well as the environment that would support (affirm, not discriminate) for these students to enter higher education. A huge part of young people in socially vulnerable families do not reach higher education, and the state closes the opportunity to use these human resources with a higher economic value. In its current form, the thinking of regional criteria also does not correspond to social reality, because the communication links between Vidin and Plevna or between Vratsa and Plevna, for example, call into question how correct it is to talk about regional significance there at all, since the number of higher schools in Northwestern Bulgaria is extremely limited compared to other regions of the country. On the other hand, traditional ties from before Bulgaria's accession to the European Union call into question the dividing lines and the definition of a region in northeastern Bulgaria. One possible way out of this is some form of redefinition that would take into account a possible index of educational inequalities, transport flows, and infrastructural accessibility, as well as the property market and prices of living in different municipalities (The standard of living in Bulgaria is often-related to the municipal levels than to purely regional specifics at the NUTS 2 and NUTS 3 level. For example, wage levels in Kozloduy municipality and Radnevo municipality differ greatly from their neighboring municipalities in the same administrative areas and the regions as a whole). In addition, one can think about the calculation of indicators from the Rating System at the level of education and qualification level, so that the Ministry of Education can know how the personnel in the different qualification levels are realized and apply a policy to them. Such a classification would allow the delineation of professional fields in which a higher degree of qualification is required in the labor market and such fields in which professional training of 3 years can be completely sufficient to satisfy the market needs of a specific field. The qualifications themselves should be clearly and distinctively distinguished so that students can choose between them. Otherwise, their choices may turn out to be unfavorable to the realities of the labor market, or it may turn out that the state or the families of the students themselves pay the price of an education that is not fully realized.

Although the framework of Bulgarian higher education has a large oversupply in some professional fields, decisions on the consolidation and optimization of the network of higher education should be made based on the variety of specialties in the relevant professional fields, as well as based on the infrastructure accessibility to a higher education institution within the planning region where it is located. Last but not least, the existing network of universities is an important resource for creating local ecosystems for the development of the knowledge economy, which places the need to increase the quality of teaching, develop research and scientific activity at the regional level, improve international exchange and even internationalization of the economy. A recommendation from part of the rectors is to reduce the admission of students in general but to preserve the funding of the university so that they can continue their activities with a higher quality. The current way of funding universities does not allow higher education institutions to reduce their intake because it would cost a large part of their budget. One of the recommendations to increase the quality of education is to encourage universities to work together with business organizations to provide scholarships for students. Such a form of joint activity will allow businesses a greater horizon of human resource planning, as well as greater confidence in their knowledge and skills after completing higher education. For higher education institutions, it will ensure the better realization of their students, as well as the opportunity to teach in more depth with more practical or other hours to meet the requirements of employers in the region. In some sectors, which are of strategic importance to the state, it is possible to establish professional directions - e.g. "Pedagogy" and "Pedagogy of the trained in..." in cities where there is an increased offer of higher education, but in other professional fields. In other professional areas, the need for educational and qualification degrees should be assessed. "Professional Bachelor" so that it can be designated as a recognized qualification or be closed, depending on the results that such future assessment shows. The promotion of the Rating System, as well as its results, remain one of the most serious recommendations. The system contains a lot of rich information that students - future and current - can use to navigate the labor market, the quality of higher education in each of the professional fields, and to be able to better plan their professional careers for themselves. development. This promotion should take place both within higher education - through higher schools and their websites, and among high school students. A possibility in this regard would be to organize a competition for the analysis of the data from the Rating System together with the National Statistical Institute. Such a possible approach could increase interest in certain professional fields, but also in research, analytical thinking, and critical view of students. This, in turn, would support the student's future academic development. One of the recommendations related to scientific activity is not only subject to the policies of the Ministry of Education. It is a policy to increase the income of scientists upon achieved or demonstrable success. Rectors say that it is very difficult for them to retain good researchers at the low salaries offered in the sector. Investments in foreign language learning are also very important given the possibility of international joint publications. In some sectors of higher education, it will be more difficult to achieve better results concerning the realization of the labor market, because the sectors they supply with personnel are often dominated by the state as an employer. Therefore, it is a matter of state policy to raise incomes in these sectors - pedagogy, medicine, and social activities. This means that the low results achieved by some universities in these professional fields are not tied only to the quality of education or regional economic specificity, but to a targeted state policy, and in this sense it is important for the Ministry of Education to develop these fields and personnel, but it is also important to work inter-institutionally so that these same personnel can remain on the labor market in the country (Terziev, 2020a; 2020b; 2020c; 2020d; 2020e; 2020f; 2020g; 2020h; 2024b).

4. CONCLUSION

Due to the extreme complexity in the reporting and evaluation of the strategic and long-term consequences of social events, which is undoubtedly a scientific activity, within the broad social approach in determining social effectiveness, we consider the social effectiveness of the implemented activities in a narrowly practical manner. And this means the highest efficiency in solving a specific social problem. The evaluation of the effectiveness of the social processes in the given case is reduced to the task of optimizing the social management activity in the process of solving specific social programs through the program approach. This, more than ever, requires the definition of criteria for the effectiveness of social processes and, on this basis, the application of appropriate evaluation methods (Terziev, 2024b). The introduction of such rating systems would raise several questions and criticisms. The first of these is who will do this qualitative assessment and how. At the moment, the accepted technology is the h index, which takes into account the corresponding number of references to a certain article and the other time indicator, which is used to determine it for the last 5 years. Different systems would show different digital dimensions because the information databases are of different completeness and accessibility. For different areas of higher education and professional fields, different ones can be used, which again will give relatively true and accurate information. Some will say that it is better to have some kind of system than none at all, and they would be right. The lack of a system of measurable criteria led to a series of paradoxical differences in assessment levels. I could not say whether this determines the quality of the candidate himself for a certain academic position, but it is a kind of certificate of the expertise of the relevant committee. In this case – a scientific jury to evaluate and rank the candidates. Competitions in our country are usually held with only one candidate. For some professional areas, this is simply the lack of other candidates, but sometimes it is also the impossibility of filling the relevant position due to a series of objective circumstances. These circumstances are related to difficulties in the development of the academic staff in recent decades, unattractiveness of the direction, or lack of funding for scientific research. Sometimes the location of the respective higher education institution is also unacceptable for applicants. In another case, only candidates from the internal environment are tolerated, even though the possible pool from the external environment would be large enough. In this case, the work of the experts would be much more difficult and the competition would be greater. The possible choice would come down to more than one candidate. Another issue of propriety is the subsequent selection by the academic and faculty council. In many cases, they are quite heterogeneous in terms of directions and interests, convincing becomes difficult and is not always related to an objective assessment and, in the end, to the right choice. In this case, it is asked whether they are competent enough to change the final result with their plow, even though this is included in their powers. If we put that aside as a secondary problem, then finding and finding suitable candidates in this very limited job market for scientists and researchers leads to a closed loop. It's no secret that some universities have been a place of livelihood for entire families for years. There is nothing wrong with this because the craft is passed down from generation to generation, but to what extent our children's capabilities are covered with our lives and, in particular, scientific interests? It's hardly the case, but it's an easy enough option, aided by academic autonomy. Such a study would yield frightening results of proximity and interrelationships. Particularly interesting developments are observed in smaller communities and the processes there are self-regulated by this factor. The change we are moving towards seeks a certain fairness and accuracy, but we are unlikely to achieve it with these adjustments in the legislation alone. Rather, it should be related to those in system management. It is often talked about mandate, creativity, strategies, etc., in general, it is related to modeling the attitudes of the general meetings in a certain way, which in some cases borders on the norms of morality and the law. However, the procedures are legal and not particularly moral. Evidence in this direction is abundant and constant.

The democratic rules do not always select the most capable, and sometimes they do not even allow a part of the scientists to appear for several reasons. This is a problem of a general nature that applies more forcefully to the academic community. There are many individualities here and in different directions. Unification is sometimes at the expense of a choice that is related to other circumstances rather than the qualities of the individual. A change in this direction is possible if, with this choice, there is a competition based on maximally objective criteria. In the current development of society, there is no way to do science independently, just as the existence of science by itself is impossible. This requires working in wider teams and cooperation in different directions. It also requires the development of an interdisciplinary approach and the development of studies in different directions and planes. This does not make the man/scientist a "penkiller", but makes him far better able to respond to the dynamics of the demands of a rapidly changing environment. Finding such a system of social criteria, that describes and values this social process as well and as fairly as possible is a rather difficult task, which requires the analysis of a large amount of information and the conduct of research of a different nature, which would allow the "construction" of such a mechanism that would meet expectations on the one hand, and achieve a relatively accurate and true assessment of these processes on the other hand (Terziev, 2024b).

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LOCAL COMMUNITY PERSPECTIVES ON TOURISM AND MUSIC FESTIVALS: THE CASE OF THE SEA STAR MUSIC FESTIVAL

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ABSTRACT

Music tourism is a contemporary phenomenon and the outcome of new affluence and leisure time in the West. Music and tourism have always converged in some way. Music sounds, scenes and performance events have encouraged people to visit geographical places in person, or travel to other places in an imaginary sense. What were only recently simply the pleasures of a few, have become quickly commodified, as local and national authorities have recognised music festivals and special events as an important means of generating profits. Music festivals have also been used to represent and market places to potential visitors because of its ability to connect places with particular images and emotions. Tourism is simultaneously a social, economic and cultural phenomenon. It transfers capital between people and places, influences the social organisation of destinations, it shapes the relationship between guests and hosts, enables the revitalisation, preservation of cultural phenomena and creates new landscapes. Each of these themes is crucial to tourism and will be examined in the context of the Sea Star Music Festival. The overall aim of the paper is to examine the ways in which music festivals influence the local community and society as a whole and in this way contribute to the current debate on the sustainability of such events in domestic tourism.

Keywords: *festivals, music festivals, events, sociocultural impacts, region, destination*

1. INTRODUCTION

Music festivals and tourism have a long history of mutual benefits. Music festivals began to be organised massively in parallel with the growth of mass tourism in the period after World War II in order to encourage tourism growth and development. From the late 1960s, the number of newly created music festivals significantly increased. Music festivals often serve as a means of affirming local culture or tradition and allow local communities to promote their own cultural identity. Music festivals are a useful tool for promoting the works of local artists and offer a concentrated period of high-quality artistic activity. Although the most common goal of organising music festivals is to improve a destination's image, there are many festivals whose primary goal was not to attract tourists, but they have done it anyway. Today, there is a large number of music festivals that aim to satisfy the needs of the local community but also those that are primarily intended to attract foreign visitors. Festivals and special events differ in their nature and location and result in numerous not only economic but also socio-cultural effects in the context of destination development.

A better understanding of the cultural identity of host communities indicates that music festivals play a significant role in their development. Firstly, they celebrate a sense of place through the organisation of shared activities in a safe environment. Secondly, they provide communities with means of hospitality and showcase values, interests, and aspirations accepted by the community. Thirdly, they are an external manifestation of the community's identity and represent a distinctive identifier of the place and people. In the last decade, music festivals have become an inevitable part of tourism development in Croatia, primarily as a result of the tourism industry's efforts to offer more than just sea and sun. Generally speaking, festivals and special events have gradually become part of the daily discourse of local journalists and have become the subject of serious consideration. In the context of these events, we have decided to explore the attitudes of the local population towards one of the currently most popular festivals on the Istrian Peninsula called the Sea Star Music Festival held in Umag and in this way contribute to the current debate on the sustainability of such events in domestic tourism.

2. EXCEEDING THE ECONOMIC IMPACT

Festivals and events are a part of a broader spectrum of new cultural strategies for economic regeneration and investment in the development of the service economy that is based on the exploitation of leisure time, entertainment, and tourism (Pine and Gilmore, 1999). Schuster (2001) argues that festivals and events bring economic benefits by improving the image of places, their products, and institutions, and by attracting flows of tourists, capital, and investment. Music festivals are an important source of revenue for a destination or an entire region representing one of the possible ways of positioning destinations at a competitive tourism market. According to Yeoman et al. (2004), festivals are a way of celebrating the special culture of a particular village, town, or region, while also being considered a new form of tourism that helps promote a specific destination. It is impossible to define common or unique characteristics for events and festivals because each one of them represents a unique event and experience and therefore cannot be classified in an easy and simplified manner. Festivals and events are infused with animation, positive vibes, and spontaneity. They take place in multiple locations and can be organized in urban or tourist areas. The content is fluid and flexible, easily adaptable to the local environment, local communities, and their cultures (2017). Moreover, over the last decades, there has been an increasing number of festivals and special events that provide an opportunity for local communities to share their culture with visitors. According to Jafari (2000), special events are those "that occur outside the normal program or activities of a sponsoring or organizing body" (p. 210). For visitors, such events represent an unusual and unique experience, and at the same time, such an event can serve a broader range of objectives, where economic prosperity and community development are two of the most important ones. The most obvious reasons for the popularity of festivals as a tool for promoting tourism are as follows: (1) festivals increase demand for local tourism (Smith and Jenner, 1998), and (2) successful festivals can help renew the image of a place or contribute to the exposure of a location that is trying to penetrate the tourism market (Kotler, Haider, and Rein, 1993). Finally, strategically placing festivals on the local tourism calendar can help extend the tourism season (Getz, 1997). "Arts and Cultural Industries, especially through festivals and special events, may offer something that will be used by the tourism sector – experience" (Reiss, 1993, pp. 47). According to Boo and Busser (2006), festivals have three main impacts on the local community and society as a whole. Firstly, they have an important economic effect due to the increased tourist spending during the festival period, which is related to the increase in the number of visitors to a particular area. Secondly, festivals have an impact on building and enhancing a destination's image, both for external visitors as well as for the community itself, which certainly represents a positive social benefit. Thirdly, festivals can be used as a strategic tool to extend the life cycle of a destination.

In addition, as Erfurt and Johnsen (2003) point out, events have a very important role in pre- and post-seasons when they become an important filter for attracting a larger number of potential visitors who may become regular or loyal visitors in a particular tourist area outside the main tourist season. However, the usurpation of space caused by festivals (such as land preparation and the construction of new tourist infrastructure) can also have negative consequences, such as environmental pollution, changes to the landscape, and disturbance of ecosystems (2019). Festivals and tourist events also affect the cultural and social domain. On the one hand, they can be a useful tool for presenting local cultural traditions and customs to visitors, thereby preserving and spreading heritage. On the other hand, exposing local culture for the purpose of attracting visitors can also threaten continuity through pressures of commercialisation (Saleh and Ryan 1993; Senior and Danson 1998; Waterman 1998). In many cases, promoting a festival means conflicting outcomes across different areas: festivals can generate economic benefits, improve local quality of life, and create community cohesion and solidarity, but at the same time, they can cause ecological damage, increase traffic congestion, and perhaps increase law enforcement costs (Syme et al. 1989).

3. SOCIO-CULTURAL IMPACTS

When it comes to socio-cultural impacts, festivals can play a key role in the development of local communities due to the fact that in comparison to other forms of culture they contribute significantly more to the development of social inclusion and are often considered expressions of cultural diversity and identity. Festivals can become synonymous with an area or region and its people, contributing to the democratisation of culture, celebration of diversity and multiculturalism, revival and strengthening of local communities, and thus have a positive impact on improving the quality of life in destinations where they take place. However, the most evident feature of festivals and special events is their temporariness (2017). It means that it would be very difficult to maintain the same level of excitement and suspense in case that such events would be organised more often. Therefore, it is ideal for festivals to be held once a year. One potential problem for the local community is the internationalisation of festivals, which often leads to the loss of authenticity and severing of ties with their own roots. Therefore, festivals of smaller scale and intensity are usually more interesting to the local community in comparison to large or mega events, in spite of the fact that such festivals often fail to attract a larger number of tourists and are not commercially sustainable in the long term, unless their maintenance is generously funded from local sources. Other challenges include problems with the loss of authenticity, compromising artistic integrity, trivialisation of culture, festival ownership, legacy of huge debts, overcrowding, to mention but a few. Festivals are very important for the development of a destination, city or region. They are catalysts for socio-economic development and important creators of image, as well as a means of affirmation and valorisation of tourist attractions and resources. They attract numerous visitors who want to satisfy their curiosity about people and places and gain unforgettable experiences. They often want to participate in the same activities practiced by the local population, hoping to gain insight into the life of a particular place. Events rooted in specific destinations provide an opportunity to understand and explore the attractions, beauty, and spirit of a place. Participants want to gain plenty of experiences and stories to tell when they get home. "Festivals have been identified as one of the fastest developing forms of leisure and tourism phenomenon" (Dimmock and Tiyce, 2001; Gunn, 1994, pp. 355-383). Festivals are an important element of attractions in tourism sector. Publicity that might be created by festivals may have cumulative effects upon a destination, substantiate community's image and identity and help in the creation of attractive authenticity.

4. THE SEA STAR MUSIC FESTIVAL

The Sea Star Music Festival is an annual music festival held in Umag, a coastal city in Istria, Croatia. The festival features numerous local and international musicians performing various genres of music. The festival usually takes place over several days, and attendees can camp on-site or stay in nearby accommodations. The festival has gained popularity over the years, attracting both domestic and international visitors. The first four editions of the Sea Star festival charmed numerous audiences as well as international and regional performers who praised the festival's quality, atmosphere, the beauty of Istria, and its acceptance by the locals. The festival includes the largest main stage that has ever been set up in Istria, which dominates the lagoon. More than 120,000 visitors have attended the festival so far enjoying unforgettable performances by global, regional and domestic superstars as well as genres such as electronic dance music and trap/hip hop that dominate the global sound. The success of the festival resulted in a nomination for Best Medium-Sized Festival, i.e. the best festival with up to 40,000 visitors per day at the European Festival Awards! Sea Star's success perfectly fits into the success of all festivals from the EXIT family, which received a total of five nominations. According to the organisers the magical location, world-famous artists, and outstanding production make this festival a "must-see" for all festival fans. Sea Star is part of the unique EXIT festival family, together with the award-winning EXIT festival in Novi Sad, as well as three other festivals: Sea Dance in Buljarica, Montenegro, Revolution in Timisoara, Romania, and No Sleep Festival in Belgrade, Serbia.

5. LOCAL COMMUNITY AND THE SEA STAR MUSIC FESTIVAL

As pointed out before festivals and special events are often the subject of empirical research into the ways in which people establish connections with space and other people during the course of the event. However, due to the excessive focus on satisfying the needs of visitors, the needs and interests of the local population are often overlooked. Eisinger (2000) notes that events often have little connection with the local population, as they are intended for visitors who come to the event from other places. Our research involving a total of 80 local residents, who expressed their willingness to answer our questionnaire and which was carried out during the staging of the Sea Star Music Festival in 2019 indicated that the impact of the festival on the local community could be two-dimensional. Initially, the arrival of the music festival into their destination created a level of euphoria among the locals, but this was soon replaced by social distancing between the local residents and festival visitors. The relationship between the local community and visitors was devoid of spontaneity and based on what is known as commercialised hospitality because everything was subordinated to the achievement of the economic gain, which ultimately resulted in an irrational increase in the prices of services and accommodation. The local community strongly condemned the pollution caused by litter, noise, and the deviant behaviour of visitors, which resulted in a conflict of their respective value systems. Furthermore, the normal life of the local community was threatened by the huge crowds of visitors who overwhelmed the local residents and endangered their established way of life. On the other hand, the respondents expressed their satisfaction with the presence of the festival and believed it to be good and useful for the development, promotion, image and differentiation of the destination's tourism product. However, they also expressed the opinion that the local community should be more involved in the organisation of such events in order to achieve greater respect for local values. In conclusion, we can say that in the process of organising and conducting larger events and music festivals in smaller places, with the aim of achieving as much socio-economic benefit as possible, it is necessary to involve all interested parties. The local community should be more tolerant and aware of cultural differences and the different motivations of visitors to participate in the festival.

The experience gained should be the result of interaction between residents and festival participants, with regulation of market conditions for participants and without negative price differentiation. In our opinion, the presence of such festivals is a positive trend, although it must involve a systematic approach to their organisation and the involvement of members of the local community.

6. CONCLUSION

Contemporary trends in tourism dictate structural changes. The solution lies in product differentiation, education and professional training, new organisational relationships, the use of technology and innovation, and communication methods between emotive and receptive markets. The global expansion of travel to destinations with standard tourism products and services has reached its peak. People's values and beliefs within the community are inextricably linked. Natural environment influences human values, interests, and aspirations, which leads to a sense and a construction of place. Festivals promote the cultural development of the community and a sense of belonging to a place. Visitors can experience a sense of community if they participate in a festival, which is an intangible combination of services and experiences. Music festivals can be of great importance to a destination or tourist region. Considering the fact that music festivals are viewed as expressions of cultural diversity and identity, and are usually more socially inclusive than other forms of culture, they can play a crucial role in local community development. However, it is necessary to carry out better and more extensive research if music festivals and special events are to succeed in providing positive benefits for destinations and their inhabitants. Issues of appropriation and local ownership are complicated by the desire or need for increased publicity, political and financial support, and tourism development. Paradoxically, however, these are usually essential to the future continuation of many festivals and events.

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DIGITAL TRANSFORMATION IN ACCOUNTING: THE PERCEPTION OF PORTUGUESE ACCOUNTANTS

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ABSTRACT

Digital transformation has permeated various spheres of society, making it harder to preserve professional identities. Thus, understanding how accounting professionals perceive this phenomenon is crucial to assessing the challenges and opportunities that the digital era brings for accountants. This study investigated Portuguese accountants' perceptions of digital transformation in accounting, using semi-structured interviews. It explores changes in accounting processes, difficulties in implementing emerging technologies, accountants' enthusiasm and preparedness for digitalization, advantages and disadvantages of emerging technologies in accounting, and perspectives on the future of the profession. Analysis of the interviews highlights big changes in accounting processes due to digitalization, challenges in implementing emerging technologies, limitations in knowledge about these technologies, and a division of opinions about the future of the profession. The results offer valuable insights for professionals, academics and stakeholders interested in the future of accounting in the digital context. However, it is important to recognize some methodological limitations, such as the representativeness of the sample and possible selection and response biases.

Keywords: *accounting, digital transformation, digitalization, interviews, qualitative research*

1. INTRODUCTION

Digital transformation (DT) takes place in three dimensions: Technological - based on the use of new digital technologies such as social networks, analytical data or integrated devices (Mushore & Kyobe, 2019; Aguiar et al., 2021); Organizational - requires a change in organizational processes or the creation of new business models (Kohli & Johnson, 2011; Lei & Jing, 2016; Horlacher & Hess, 2016; Tekic & Koroteev, 2019; Kruskopf et al., 2020; Crittenden et al., 2019; Morze & Strutynska, 2021); Social - influencing all aspects of human life and life in society (Reis et al., 2018; Mahraz et al., 2019; Mergel et al., 2019). In this context, accounting has undergone significant transformations driven by the advance of digital technologies.

Thus, understanding accounting professionals' perceptions of the impact of digital transformation is fundamental to assessing the challenges and opportunities that arise under this scenario. This article presents the results of a study that investigated Portuguese accountants' perceptions of digital transformation in accounting. Using the interview technique for data collection, the study sought to explore several dimensions, including the changes in accounting processes, the difficulties in implementing emerging technologies, the degree to which accountants are prepared for digitalisation, the advantages and disadvantages of emerging technologies in the profession, as well as accountants' perspectives on the future of the profession. Through analysis of the interviews, significant trends and patterns were identified, providing valuable insights into the current state and prospects of accounting in a digital context. The results of this study offer important contributions not only to accounting professionals but also to academics, policymakers and stakeholders interested in the future of the accounting profession in the context of digital transformation. After the introduction, chapter 2 presents a brief literature review on the digital transformation in accounting. This is followed by chapters 3 and 4, which present the methodological approach followed and the presentation and discussion of the results in the light of literature. Finally, we present the main conclusions, as well as the limitations of the study and prospects for future research.

2. DIGITAL TRANSFORMATION IN ACCOUNTING

The digital revolution will lead to the disappearance of many jobs (Brynjolfsson, and McAfee, 2011; Mahnkopf, 2019). Still, at the same time, it will provide new opportunities for recent graduates and workers who are willing to develop new skills (Caruso, 2018). In the accounting field, technology improves productivity and saves professionals time to devote to higher value-added tasks. However, in addition to being able to handle increasingly sophisticated software, accountants now have to learn to interact with Big Data programs, Artificial Intelligence, Robotic Process Automation, Cloud Computing, and Blockchain, among other technologies. Although automation can compromise the information quality (Korhonen et al, 2020), and involve high technology investment (Gonçalves, et al., 2022), it will allow accountants to focus on higher value-added services and consequently increase the value of services (Hoffman, 2017; Gulin *et al.*, 2019; Kruskopf et al., 2020). The repetitive tasks of posting and classifying accounting documents are more likely to be replaced by automated technology than higher-value tasks involving professional judgment (Greenman, 2017). Therefore, the ability to keep up with rapidly changing technology will be increasingly valued within the accounting profession (Greenman, 2017) and will eventually become a necessary but not sufficient condition for differentiating professionals in the market. To continue to create value in the digital age, accountants will find themselves somewhere between the frontier of specialisation in accounting and information technology. In this context, the future hybridization of the profession is a prospect that is gaining more and more ground (Rîndaşu, 2017). If this perspective is confirmed, academia will have to adapt the training programmes for professionals, focusing on a high level of understanding and ability to handle emerging technologies. Suleiman *et al.* (2020) predict that accounting courses will soon also include subjects related to programming and the use of AI for routine accounting tasks. Also, according to Sherif and Mohsin (2021), students taking accounting courses should be prepared on subjects such as data analysis, data security, cybersecurity and other digital tools. Similarly, professional accounting organizations such as the International Federation of Accountants and the Chartered Global Management Accountants attach great importance to the integration of ICT in accounting courses (FiDan & Subaşı, 2015; Silva and Gonçalves et al, 2022). Table 1 shows the main effects of digitalization in accounting.

Table 1: Impact of digital transformation in accounting

Area	Effects
Emergent technologies	Artificial Intelligence; Blockchain; Cloud computing; Big data; Robotic Automation Process;
Carrying out accounting tasks	Automation of routine, repetitive and structured tasks; Non-routine and unstructured tasks will require human thinking and additional skills and knowledge (e.g. interpreting and analyzing financial information)
Education and training	Changes and modifications to university course programmes; Critical thinking; Problem-solving; Skills related to the use of AI; Accounting engineering; Interpersonal interaction and communication

Source: Adapted, cited in Gulin et al. (2019)

Blockchain is a technology that enables the direct exchange of data between participants in a network, without intermediaries (Pugna & Duțescu, 2020). It emerged in 2008 with the concept of decentralization for cryptocurrency transactions (Pugna & Duțescu, 2020). Its architecture includes distribution, encryption, immutability, tokenization and decentralization (Furlonger & Uzureau, 2020). Despite the recognition of Blockchain's potential in accounting, clarity about its transformations, challenges and risks is still uncertain (Pugna & Duțescu, 2020). Artificial Intelligence has been used since the 1980s to analyze reports, detect fraud and make predictions (Sherif & Mohsin, 2021). Designed to mimic human behaviour, it offers benefits such as greater efficiency, authenticity of information, real-time reporting and a focus on value-added activities (Sarkan, 2018). Although some fear it will replace human tasks, AI aims to amplify human intelligence (Gulin et al., 2019). Big Data makes it possible to analyze large volumes of data to support decisions (Groșanu et al., 2021). Its characteristics, such as volume, speed and variety, present security challenges (Yau-Yeung & Yigitbasioglu, 2020), but also opportunities to improve accounting decision-making (Younis, 2020). Robotic Process Automation (RPA) RPA automates repetitive and rule-defined tasks, freeing accounting professionals from strategic activities (Syed et al., 2020). Although it does not replace human judgment, it promotes the rationalization of tasks and improves productivity (Aguiar et al., 2021). Cloud computing eliminates geographical barriers and infrastructure limitations, thus promoting remote collaboration, scalability and security for accounting operations, and organizational agility (Christauskas, and Miseviciene, 2012; Liu et al., 2018). It also democratizes access to advanced technologies and drives the adoption of digital accounting. These emerging technologies offer significant opportunities for accounting but also present challenges in terms of regulations, cyber security and changes to the traditional roles of accounting professionals (Pugna & Duțescu, 2020). Indeed, and despite the inevitability of digital transformation, the implementation of new technology is complex, time-consuming and, in some circumstances, costly. This can be a problem for smaller companies in particular, as they may not have the capacity to implement new technologies to the same extent as, for example, companies of a different size, and therefore may not be able to keep up with the changes (Marr, 2016). The study by Rîndașu (2017) concludes that accountants are becoming familiar with emerging technologies, although they haven't mastered them completely. Despite this, their level of knowledge proved sufficient to identify the main benefits and challenges. Nevertheless, they still need to develop new skills and improve their knowledge to acquire efficient work tasks.

As cybersecurity was the main challenge, the study participants demonstrated an above-average theoretical level of awareness by correctly identifying the main problems. According to Kruskopf et al. (2020), these circumstances generate a feeling of unease among older workers, who feel that they are being left behind in this transition to the digital age. Their biggest fear is that they won't be able to retain enough information to remain competitive in the accounting environment. Workers over 50 face challenges associated with new technology and automation and, as a result, fear that younger people will take over their jobs in the future. On top of all this, there is political uncertainty about the social role of professional associations. The first warning about excessive professional regulation came from the European Commission and the Organization for Economic Cooperation and Development (OECD). As a result, in the first version of the Troika memorandum, the European Union imposed the need to reform professional regulation in Portugal. Similarly, in the context of the AdC Impact 2020 Project - Public Policy Competition Impact Assessment Project, the OECD initiated a joint project with the Portuguese Competition Authority (AdC) to carry out an independent and thorough economic policy assessment, to identify laws and regulations that may restrict the proper functioning of markets in two sectors: transportation and 13 self-regulated liberal professions, which include certified accountants (OECD, 2018). Following this study, the (AdC) carried out a report to propose concrete changes to the current national legislative and regulatory framework for the 13 self-regulated liberal professions, to eliminate or mitigate regulatory provisions with a competitive impact and increasing competition in the provision of these professional services (AdC, 2018). Thus, the PRR - Recovery and Resilience Plan (Ministério do Planeamento, 2021), contracted between Portugal and the European Union, included an initiative to reduce restrictions on regulated professions (RE-r14). After a long period of public discussion, the Law no. 2/2013, of January 10, was approved. It establishes the legal framework for the creation, organization and operation of public associations, following the wording given to it by Law no. 12/2023, of March 28. Following, Law no. 68/2023, of December 7, was published in the Official Gazette, amending the Statute of the Order of Certified Accountants. In this context of "professional deregulation", it is important to understand how Portuguese accountants perceive the impact of the digital transformation on accounting.

3. METHODOLOGY

Our research question can be formulated as follows: How do Portuguese accountants perceive the impact of digital transformation on the profession? To address this question, a descriptive exploratory qualitative study was conducted. Data were gathered through semi-structured interviews, following the methodological recommendations of Batista et al. (2017), Minayo & Costa (2018), and Tsai et al. (2020). An interview script was prepared, as detailed in Table 2. A pre-test was conducted to validate the script's applicability, leading to minor adjustments in the sequence of topics and allowing the researcher to refine the interview process based on gained experience.

Table following on the next page

Table 2: Interview script

Dimensions	Objectives
Ethical/legal considerations	Presentation of the objectives of the interview and issues related to confidentiality and data disclosure. Informed consent.
Identification of the interviewee	Socio-demographic characterization Professional Characterization
General perception	Changes in tasks and processes Difficulties and limitations encountered in the implementation of emerging technologies The level of preparedness among accountants for digitalization and emerging technologies The advantages and disadvantages associated with the integration of emerging technologies in the profession Anticipated trends and prospects for the future of the profession
Individual Positioning	Individual reaction to the introduction of new technologies Personal experiences and concerns

Source: Own elaboration

The interviews were carried out during August 2022 and the invitations were made by telephone, as well as the scheduling of the interviews. Seven people were invited, all certified accountants. The interviews were conducted by telephone (3), via Zoom (2) and in person (2). They lasted an average of approximately 15 minutes. During the interviews, we were free to interact with the interviewee to promote a more open conversation. With the permission of the interviewees, the interviews were audio recorded to obtain the best quality analysis.

4. RESULTS PRESENTATION AND DISCUSSION

During the interviews, it became clear that most of the interviewees are aware of digital transformation, although their knowledge of emerging technologies is quite limited. This is in line with the study by Rîndaşu (2017) in which he found that accountants are becoming familiar with emerging technologies, although they haven't fully mastered them. Most of the participants perceived the digital transformation as a gradual process, they didn't feel there was a crucial moment, as one of the accountants put it: "It was a progressive process, it wasn't immediate and when we look back we see that there was significant progress, although it was gradual". Other participants identify some key moments that stimulated digital transformation process, such as: "With the introduction of Simplex, in 2005, everything changed (...)." When asked about the emerging technologies they use, all the participants mentioned ERP. In addition, *Cloud computing*, AI, OCR and RPA were also cited. But, although cited, some of the concepts were somewhat unfamiliar. Indeed, when they were asked which emerging technologies they actually knew, the majority only mentioned one or two, ie, the ones they work with, which means their knowledge of emerging technologies is quite limited. One of the reasons for this may be that the accountants interviewed work in "small" offices that still make little use of emerging technologies. These responses are in line with the study by Rîndaşu (2017) which states that accountants are becoming familiar with emerging technologies, although they haven't mastered them completely. According to the participants, the processes/tasks that were affected by the digital transformation were "tax declarations... submitted through the platforms that the state has created, namely the Finance and Social Security Portal" and "accounting software, which allows the automation of accounting register, such as accounting entries... moreover, digital documents was also quite important". Other participants emphasised this point: "I felt a greater impact on accounting entries, we are now able to import data and then the program can automatically enter it through the supplier." One participant mentioned the aspect of digitalization: "It's obvious that now with digitalization of invoices and the QR Code, we've made greater progresses.

Here, in the office, we already have some clients for whom we don't have the paper invoices because we integrate and then put them into the program with the QR Code. From the moment we started talking about e-invoicing we became aware that the future will pass through that, there's no doubt about it." Regarding the limitations/difficulties, one participant said: "We didn't experience many difficulties, because the software helped us, but of course, there was some difficulty in adapting at first. If you ask me how difficult it was, I'll tell you that it was average (...) it was just the novelty of understanding how they work, there's always that transition phase when you stop delivering on paper and go digital, it was a matter of adaption." Other participant reinforce this point of view: "although I don't feel completely at ease, I haven't had any difficulties, I've had to adapt and whenever I have any doubts I talk to the IT guy or an accountant colleague". About the advantages of implementing emerging technologies, the participants pointed out several: "ease of searching for documents, with the digital archive and even for the good of the planet because of the reduction in paper"; "I can waste less time on day-to-day tasks and therefore pay more attention to the client"; "Now we can check the accounts of clients, suppliers and bank statements more quickly, allowing accountants to have more time to help clients in other areas, such as management". This perspective is supported by literature, namely Hoffman, (2017), Gulin *et al.*, (2019), and Kruskopf *et al.*, (2020). Another participant said: "The speed and efficiency, the reduction in the number of errors, the availability of access to documents and the saving of time"; "We can have access to data at any time, I can take my laptop home and work from there without being in the office"; "There is also more time available to help clients in other areas of business"; "...errors can also be reduced and resolved more quickly because, for example, when I submit a VAT return if there is an error, the website doesn't let me submit the return and tells me which error I should resolve, whereas in the past when we submitted on paper, if there were errors the return 'came back' and only then could we resolve it.". In line with the testimonies, Richins *et al.* (2017) argue that accountants can think strategically and leverage their knowledge of the business of companies/clients to increase the value provided by *big data* and conclude by saying that this knowledge is a complement and supplement to technologies, invaluable for maximizing the value of companies. About disadvantages, only one interviewee said there were none, while the others cited the costs of technology, job disappearance, errors, and data security. The job disappearance was identified by participants, in line with the prediction of Frey and Osborne (2013). The obstacle of technology cost, identified in the study of Gonçalves, *et al.* (2022) was also mentioned by participants: "The costs, which are higher compared to the past, for example, before I had an accounting program that I bought and kept for several years, today that no longer happens because I have to pay the rent...". T; "the decrease in jobs"; "...the danger of constantly sharing of data, because the information is increasingly available to a greater number of people...". These worries are identified in the literature, see, for example, Yau-Yeung and Yigitbasioglu (2020). The potential errors relating to automation, mentioned by Korhonen *et al.*, (2020) is also referred by the participants: "The accounting becoming very mechanized and passing on some error or information unnoticed because when it was on paper you became very aware of it"; "... if it's automatic and digital you lose a lot of awareness of what's in the documents ..., I notice this because I had some trainees here and many of them were making entries and had no real idea of what they were doing if there were any particularity in the document, they no longer knew what to do". In terms of the credibility and reliability of the technologies used, there are some divergent points. While some accountants say: "It can be a problem, these technologies don't always work the way we want them to, and ... it's only reliable as long as the accountants are prepared for it, ... in terms of reliability, there is always a higher vulnerability, for example, about *hackers* and *phishing*". Other participants mention that: "credibility and reliability are quite high, but there can always be problems if we don't have a regular security policy"; "credibility is quite high because I always check the documents,

it's not enough to post them and not look at them again..."; "I have total credibility and reliability because I carefully check the documents that are automatically registered." As for whether accountants are prepared to adopt new technologies, while some participants say they feel that accountants are prepared, others mention age as a factor of resistance to change: "Those of my age (63) no, they are not prepared, there is still a resistance to change..."; "The older accountants are still quite attached to the paper ... I think that older accountants resist changing, but with the hiring of new people who are already more used to dealing with this digital transformation, they end up adjusting a little"; "The younger accountants who have recently left or are now leaving university I consider that they do, while the older ones I believe do not". These perspectives are in line with Kruskopf *et al.* (2020). According to the authors, workers over 50 face challenges associated with new technology and automation, their biggest fear is that they won't be able to retain enough information to remain competitive in the accounting environment. One of the accountants even mentions: "I believe that when I'm 70 and other new technologies appear, it will be more difficult for me, just as other older colleagues of mine found it more difficult, but they ended up adjusting and a lot of people 'jumped ship'. Accounting today is much more demanding than it used to be, there are many more obligations every month, the demands are much greater, and you need to have a lot of knowledge in accounting, taxation and management." Another accountant also talks about the stress factor: "Everyone has now had to adapt, those who haven't adapted have been adjusting in other ways, for example by hiring other certified accountants, and others have simply moved away from the profession because it often becomes very stressful." About the training they have had, most of them mentioned the training given by the accounting professional bodies, such as OCC, while others said that they keep up to date through other accountant colleagues and one even said that he didn't need any training because he feels "quite comfortable in the computer environment". When asked about the best methods/training to adopt for current and future accountants, the interviewees were unanimous in referring to more training and knowing how to work well with software: "training and more training, ... they mainly have to adjust, we already know that year after year there are updates, we have to adapt to change"; "... fundamentally, mastering the software well, ... the office tools"; "Eventually doing training and a more open mind to be willing to learn, being attentive to updates and attending training promoted by the professional bodies". One of the participants mentioned another aspect that could be important, especially for future accountants who are still at university: "From the experience of the trainees I've had here in the office, I think they should have more practice at university, work more with accounting programs because I feel they are unprepared regarding information technology." This aspect was also mentioned in the study by Sherif and Mohsin (2021). According to the study by Sherif and Mohsin (2021), students attending accounting courses should be prepared to know about data analysis, have knowledge about data security and cybersecurity and be prepared for developments in the transition to digitalization. Rîndașu (2017) also reinforces the idea that the academic environment plays an important role, as it makes future professionals more familiar with these technologies during the accounting and finance learning process. As for the digital skills needed, the participants' answers were a little vague, saying that the important thing is to master the software they work with and the office tools. One of the participants even said: "Digital skills don't need to be very great, because as soon as you have the devices that transform physical documents into digital ones and you have a good program that manages the digital folder and the accountants know how to use the applications well, you won't have any major problems. You also need to have a very innovative accounting awareness so as not to make mistakes, otherwise digital becomes a mess and can cause problems, you need to know how to analyze what is registered." These skills are also mentioned in the study by Greenman (2017), in which companies' financial directors are currently looking to hire accounting professionals with experience in data analysis, experts in accounting software and

advanced knowledge of Microsoft Excel. The most impactful events where e-invoice and SATF. Both tools were introduced by Ministry of Finance. All the participants mentioned these two applications as having made a major contribution: "e-invoice and SAFT were undoubtedly a turning point, as it allows us to check our clients' purchases and sales"; "felt more changes when the State created a direct link to Finance and Social Security, which ceased the paper"; "e-invoice and SAFT helped a lot, because every purchases and sales are automatically in the system, which has made accounting more straightforward and coherent"; "e-invoice and SAFT speeded up digitalization and the paperless future, that's it. Since these two applications appeared, there has been a speeding up of integration and accounting, with less chance of errors." The interviewees believe that there is a general fear that the tasks that accountants perform may be replaced by machines in the future, as I quote: "That routine work, of always doing the same thing, I believe will disappear. I even believe that for the simplified regime in the future, there will even be automatic accounting, in which the accountants only make a few adjustments"; "Some of the tasks, such as accounting entries are all done automatically and that's the way forward, ... because currently the accountant only really has to know how to analyze what the machine is doing, I believe that in the space of 5 years, everything will be practically automatic". One of the participants even gave an example: "With the electronic invoice... the programs just need to pick them up and register them. Currently, the software already does a lot of automation, especially with invoices that are in the e-invoice system; the software loads them, classifies them and registers them automatically, with practically no human intervention..." From another perspective, some of the accountants said: "Yes, there is this fear, but I don't think it's just in accounting, many other professions may disappear or be replaced by machines, (...) this will never end, but it is obvious that there is work that is not done today in terms of accounting or in terms of helping with the economic/financial management of companies that in the future the accountant may have even more time for more timely or rapid decisions. I'm not afraid of these technologies threatening the profession, because machines can do everything, but they still don't know how to think and a thinking person can do it in a different way to a machine. In general, I don't think technologies are a threat, they can be an opportunity". These last two statements are in line with the study by Greenman (2017) in which he mentions that the repetitive tasks of posting and classifying accounting documents are more likely to be replaced by automated technology than higher-value tasks involving professional judgment. Regarding future expectations of the profession and whether it could merge with another profession, the main opinions are expressed through the following testimonies: "The accountant needs to dedicate himself more to perfection and to help the client, give him more support for business, which can help the client make the most profit, so in the future, it may even merge with the profession of consultant"; "The figure of the accountant in the future will be different, the tasks will involve helping more in management, in the tax, that is, in tax savings. He may be more of a consultant and less of a routine or technical worker"; "The accountant in the way he exists today may disappear and become more of an auditor, because if the processes are automatic there's no point in having an accountant because the accountant is still a bit confused with a data operator, where he uploads the data from the programs, so future accountants will read the data and interpret it, he may become more similar to an auditor"; "In the future we may even merge with auditors, because we have practically the same training and the word "accountant" has a negative connotation... I believe that in the future we will have a job more like an auditor, in other words, analyzing and checking more documents and leaving behind those routine tasks, which will become automatic"; "the accountant will always have to be the link between the taxpayer and interlocutor with the State, and I don't think that will change in the short term"; "the accountant will never disappear, it's their tasks that may change over time; "the profession will never cease to exist, but accountants have to value themselves more because it's a very important profession."

So, regarding the expectation that in the future the accounting profession may merge with another profession, the interviewees defended the idea that the tasks and work of the accountant will change and therefore may have similar functions with other professions, such as auditors or consultants.

5. CONCLUSIONS

The research question that guided this work was "How do Portuguese accountants perceive the impact of digital transformation on the profession?". To this end, we carried out a qualitative and exploratory study, using the interview technique to collect data from a small number of Portuguese accountants, seeking to capture their perception of the impact of digital transformation in different dimensions. From the analysis of the interviews presented above, we can conclude the following:

- Tasks/processes that have changed: Processes such as filing tax returns have changed significantly due to the computerization of the Finance and Social Security Portal, as well as accounting entries, which are now more digital.
- Difficulties/limitations in implementing emerging technologies: Lack of knowledge about emerging technologies is common, especially in smaller accounting firms. The transition to digital required an initial adaptation, but many accountants overcame the difficulties over time.
- Accountants' level of preparedness regarding digitalization and emerging technologies: Although most accountants are aware of digital transformation, their knowledge of emerging technologies is still limited. Resistance to change is more common among older accountants, but continuous training is seen as essential to keep up with changes.
- Advantages/disadvantages of emerging technologies in the profession: Advantages include greater efficiency, reduced errors, faster access to data and more time to focus on customer service. Disadvantages include higher costs, potential job losses and data security concerns.
- Perspective on the future of the profession: Opinions are divided on whether accountants' tasks will be automated in the future. Some predict a significant change in accounting work, with functions similar to those of auditors or consultants, while others believe that machines will not completely replace human judgment.

Overall, accountants recognize the importance of digital transformation but face challenges in adapting to and understanding emerging technologies. Continuous training and the ability to adapt are seen as crucial for the future of the profession. This study offers valuable insights into Portuguese accountants' perceptions of the impact of digital transformation on accounting. By analyzing the interviews conducted, we can better understand how accountants are coping with and adapting to technological changes in their profession. The findings highlight not only the areas in which accountants perceive significant changes due to digital transformation but also the perceived advantages and disadvantages of these changes. In addition, the study sheds light on how prepared accountants are to deal with emerging technologies and their outlook on the future of the profession. This information is essential for informing policies and strategies aimed at supporting accountants in effectively adopting digital technologies and preparing for future challenges and opportunities. The work contributes to the existing body of knowledge by providing a detailed insight into the perceptions and experiences of Portuguese accountants in this evolving context, while also highlighting key areas for future research and professional development. It is important to recognize some methodological limitations in this study. Firstly, the sample of accountants interviewed may not be fully representative of the diversity of the accounting profession in Portugal. In addition, the selection of participants may have been influenced by factors such as availability and interest, introducing a possible selection bias. Interviewees' responses reflect their individual experiences and may be subject to response bias.

Furthermore, interviews may not fully capture all the nuances of participants' perceptions, due to time and format constraints. Finally, memory and retrospective limitations can affect the accuracy of the information provided. In terms of future research, it would be interesting to explore the development of digital skills in accounting, focusing on identifying the specific skills needed for accountants to thrive in the digital age, as well as effective training and professional development strategies to acquire these skills. In addition, it would be valuable to investigate the impact of digital transformation on accountants' ethics and professional responsibility, examining how emerging technologies are influencing ethical issues such as privacy and data security, and exploring accountants' responsibility in the use of automated technologies. These investigations could provide crucial insights to guide policies and practices that promote effectiveness and integrity in the accounting profession in an ever-changing digital environment.

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SOCIAL TRANSFORMATIONS AND SOCIAL PROGRAMMING

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ABSTRACT

In its multiple meaning, the word “programme” is widely penetrating in the field of social life and is also understood as list, index, notes (of theatre, concert performances, performed roles and their performers, in radio and television broadcasts, of authors of reports, scientific conferences and symposia), etc. Namely the potential range of application of that term is the grounds for transferring its general meaning upon wider and wider fields of applicability, within which frames to define its aspect meaning and content. For the aims of our study, we determine the term “programme” in the aspect of a certain public activity, what social activity is. We use the concept “social programme” in this sense, which definition finds manifestation in several aspects: The social programme is a perspective concept for the growth of wealth and development of social relations. Social programmes appear to be special sections of the economic and social development plans (yearly or for a longer period) of the corresponding planning regions, districts and municipalities.

Keywords: *Social program, Social programming, Social transformations, Control, Management*

1. INTRODUCTION

Social programmes contain specification of the goals and tasks, reflect their hierarchy, serve for forming new forms of satisfying population's social needs and for creating of corresponding new organization connections. The combination of outlined and feasible actions (measures) in one or another social field can be quite reasonably be reviewed in the capacity of a social programme, in this case, if they haven't got unified programming document, plan, etc., but grounded on a common concept, interconnected and directed towards achieving one complex goal. The pointed qualities of social programmes such as conceptuality, targeting for satisfaction of social needs, including new forms, defining the reference points in the social development, the social criteria in economy's progress, their expression in quality and quantity indicators, type diversity and social flexibility, allow to be found as universal method for political and management activity. Using this method might vary depending on the general and specific social-economic, political and other circumstances (Terziev and Georgiev, 2020; Terziev, 2013, Terziev, 2014). Although recognizing the time in our society – the end of the 70s, social programmes are reviewed within the frame of the then existing system of party management and total state directive-based planning (Semenets, 1999). The term “target complex programme” has established itself in the political and management vocabulary since the 70s, which is usually understood as “directive-based and addressing document, which is bound to resources, executors and time terms for conducting a complex of interrelated tasks and actions, united by a common goal” (Semenets, 1999). Recognizing the significance of such programmes in the practice of managing, it is necessary to note that their general name is far not the most proper. The adjectives “target” and “complex” characterize the attributive, immanent features of each programme, not of the ones of the particular class only. Non-target and non-complex programmes simply do not exist.

Each programme, openly or not, contains a goal and a certain number of or a complex of means for execution. This case confirms once more the necessity of terminological analysis and of finding an adequate definition. The term "programme" started being used by the American politicians and in the scientific circles for signifying part of the budgetary process, as a direction for financial funds for solving particular social and economic tasks. It is to be noted that in most of the aspect definitions there is identifying of the term for programme, with the term "plan", where there is merging of one of the terms into the other. A circle of definitions appears of the type "a programme, this is a type of programme", etc. The terms project, model, etc. are put within this circle, which interpretation is also changeable. The identifying of the term "programme" with the term "plan" distorts the essence of the programme-targeted approach of management and the integrity of the management phases - planning, programming, budgeting. Each one of them has certain functions in the management process and has as result certain products. And if the phase planning gives answer to the question "what" (has to be done), the phase programming looks for answer to the question "when" (to be done), and the budgeting phase gives answer to the question "how much and what resources are necessary" (for what is to be done). The substantial is that these are the questions of each management process, united by the question "Why". This is the reason for the particularism of programming to be looked for as intermediate phase between planning (defining the long-term goals) and budgeting (specifying the interrelation of the goals and the resources insuring). And this, more or less, expresses the subordination "resources-capabilities-effects", which lays in the grounds of results-based management (Terziev and Georgiev, 2020).

2. THE PLACE OF PROGRAMMING IN THE STATE'S SOCIAL POLICY

The programming, as grounds of management in the public sector, and in particular of the management of the state resources, is an intermediate stage between planning and budgeting at implementing the state's social policy. The reason for social programming is set in the very nature of planning as type of prognosis. It, the planning, includes in itself the activities of "distribution of resources, adaptation to the external environment, the internal coordination and the organization strategic cooperation" (Angelov, 1995). Namely on the grounds of the continuous planning horizon approach, the future actions connected with the state social policy are prognosticated, and balance between the long-term priorities and the short-term requirements and expectations of society from state social policy is ensured. In other words, planning is directly connected with drawing programmes. More, the programmes appear to be the connecting section between the mission, the goals and the plans. Through them, the goals are bound to the resources, "reflecting the whole potential for achieving the set goals" (material, financial, human, information resources) (Andreeva, 2001). The result of the planning process is the programme directions of the separate ministries and administrations that annually give "the criteria, goals, priorities and the medium-long financial frame that are base for the programmes effective management" (Armed Forces Development Management System, p 13). All elaborated plans, financially bound by programmes and guaranteeing the programme goals implementation in the social field are synthesized in the ministries' and administrations' programme directions. This means the programme directions are grounds for realizing the budgeting as manifestation of one of the most distributed methods of coordinating the social plan implementation and the resources. Programmes are "combination of actions, specification by time-terms and executors and are directed towards achieving one or several goals" (Andreeva, 2001). Thus, from program-targeting management's point of view programming is to define the expedience with the choice of one or another approach for maintaining the directions. It ensures the mechanism that allows finding the combination of circumstances for the complete satisfaction of social needs within the frame of the limited budget resources. In this sense, programming makes possible the elaboration of alternative options for taking

optimal decision managing the social processes and resources for building and maintaining of expedient social policies and their carrying to the social environment factors dynamic changes. And this is in the base of the so called "designed management" (Kamenov, 1999a), which plays the connecting role between the resource potential and the goals and tasks of social policy. On one hand, design management is connected with the concrete factors and conditions for achieving the final goals, giving answer to the questions "what-is". On the other – it is a model synthesizing in itself the various sides of social processes management, while this way it makes it possible to get a summarized view for the social policy. Thus elaborating programmes through design, various connections and subordinations of social processes management are embraced, which wouldn't be defined at other circumstances. Thus each part of the projects is bound to the budget limitations, where on the grounds of the various combinations of conditions and possibilities they synthesize in the programmes. From here, the programmes are reviewed as an integrated plan of using the resources for social activities, conformed to the occurred changes in the social environment. This, and the circumstance that alternative programmes elaboration is based on the variable costs, without their precision being necessary, makes programming a necessary phase of the social processes programme-targeted management. System analysis of the missions, goals and tasks of social policy is accepted as advantage at this intermediate stage between planning and budgeting. The alternative approach at choosing methods for implementing the social policies is in the base of the effective distribution of the resources for the execution of various assignments and the related time and expenses. The terminological polysemy with the defining of the programmes makes impression, which leads to difficulties in the political and management activity. The attempts to get out of that situation at legislative level, to give a precise meaning definition of the term "programme" legally speaking are well known. In one of the first attempts like that undertaken by the USA congress in 1975, in the law "For the State Economy and the Reform of Expenses for 1976", the programme is defined as grounds for the budgetary direction of the state authorities activity. In other words, the established in practice type (aspect) interpretation of the term is legally shaped. While scientists debate, the law-makers, using their works, give interpretation of the terms for particular circumstances. Despite that, the issue with the term "programme" requires further review and general solution. Said in other words, the answer is to be looked for not in the sequence of terms placed in a row, but in the summary of aspect interpretations, in the logic of common essence qualities. Taking into consideration the expressed interpretations, without pretending for final editing, the programme could be defined as dynamic, structured image and way of acting (fixed in certain symbolic systems), created for coordinated interaction by the subjects of activity for purposeful impact upon a subject of that activity with the help of bound resources, executors and time terms for realization, complex of tasks and actions. From social processes' point of view, social programmes might be defined as dynamic structured image and way of acting (fixed in the programme's text), created for coordinated interaction by the subjects of power, directed towards solving of socially significant problems with the help of bound with resources, executors and time terms for realization of a complex of tasks and actions. The way of action and the connected defined approach appear to be of key significance in the given definition. Before undertaking one or another practice action, the subject mentally constructs their image "modus Vivendi". This complicated mental process is based on the necessity and the possibility for satisfying a necessity that has significant importance for the subject, for solving problems and for result of the undertaken actions that could be suggested. In its shape regarding the current activities, the programme answers the question "What to be done?", but the answer of the question is inevitably connected with the other one "How to do it?". Defining the way of the forthcoming activity "modus operandi", the choice and the order of use is kind of complex of means for getting the demanded result.

These means might already actually exist or their creating to be forthcoming. In any case, they are preliminary selected and arranged in a certain structure and sequence (logical and temporal). Here, also the structure and sequence of operations of use of these means is to be made, and respectively the program's authors' and executors' efforts. In the process of implementation, of single elements as well as the whole structure of the programme, an action within the given property, might be reviewed, corrected, modified and terminated. More, integral programmes that realize goals, which are not within the intentions of the initial participants, might be drawn from the programme for behaviour and interaction among the single subjects. And not the least, the term "programme" expresses one of the most important characteristics of human activity, namely being ahead of any actions by their mental form. The programme appears to be a special product of individual and/or collective mental activity directed towards practice and manifests as family category for very special or private constructions, where a particular model for purposeful actions is created or a concept for social development of the region, district or municipality, target programmes for population's social protection, complex employment programme, etc (Terziev and Georgiev, 2020). Depending on the priorities decomposition's phase, the following stages of elaborating programmes could be defined:

- At the first level basic programmes that reflect the goals and tasks in social policies in compliance with the long-term development goals are elaborated. Each basic programme contains: the programme goals, the organizational structures that participate in the programme, the responsibility for the programme's implementation, the external factors that could influence the programme's goals' achievement, the necessary information sources and the three-year budget prognosis by departmental and administering paragraphs of the programme;
- At the second level, the programmes, where the corresponding components are identified by types of social policies, are elaborated;
- At the third level, the definition of the sub-programmes as specification of the programmes by structures is;
- At the fourth level, the programme elements that possess relative autonomy, allow giving value, assessing and separate distribution of resources, reflecting on the social potential, are defined;
- At the fifth level, the programme sub-elements are differentiated, as detailing the programme elements by priority operations.

3. DYSFUNCTIONS OF SOCIAL SYSTEMS

Social systems function according to certain rules and have their internal dependencies. Their main purpose is to serve the requirements of the participating individuals in these social systems. Tensions in social systems create an objective danger to their existence. This leads to significant discrepancies between the expectations and needs of those participating in social systems and their objective reality. All this can be caused by the new expectations or new needs that have arisen as a result of the social development of the systems, but it can also be a result of the internal tensions that have arisen in the systems themselves. These stresses can be classified in different ways and according to different criteria, but this is not the subject of the present analysis. Rather, it is important that the tensions in social systems that occur or are created by crises cause changes. These changes can be both desired and undesired. They will ensure the further existence or transformations of a social system. The impossibility of preserving their functioning in this form is more than obvious. Attempts to preserve them in this form will continue, but this is unlikely to be possible. The elites of the societies have raised new claims, which must be realized in some kind of social development, which will lead to serious transformations and changes in the social systems.

The objective prerequisites for significant changes in social systems are present. New paradigms and new social claims are announced, numerous crises of different natures arise, as well as the fact that the leading social leaders create expectations for changes through their behavior. Social leaders in their communication in the social environment use the full range of means to impose their emerging desires. They do not always directly correspond with the wishes and expectations of those participating in a certain system. The environment in the social system becomes unstable and this further leads to the creation of future expectations of change. Objective scientific and research approaches provide only a small part of the answers for managing change in social systems, and they can even be misleading and even wrong in some cases. Social systems begin to obey the managerial views and specific decisions of social leaders who have a dominant influence. Historical retrospect provides some answers to these new expectations. They are not always related to the logic and correctness of the subsequent decisions, but rather to objectification in some reality of the strategic decisions of the dominant social leaders. Dominant social leaders begin to create social systems according to new rules and new requirements. If objectively possible, they try to transform them, or rather adapt them to their views, demands and intentions. In other extreme situations, they try to destroy them and recreate them. This version of the existence of social systems is the most critical from the point of view of the individuals participating in them, but sometimes the most pragmatic from the point of view of the dominant social leaders. Naturally, during the transformations or the creation of new social systems, various factors of the environment will have a significant and undetermined influence. They will be carriers of both progressive and regressive ideas. Support for both will change and gain different importance over time. It will be illusory to claim that the sustainability of the newly created or transforming systems will pass into an acceptable conditionality for all participants. The emergence of new demands and new conditions will put them to trials that they have not experienced at any other time in their human existence. Objectively, a larger part of the participants in the social systems will try to adapt to the new social conditions, but a significant part will find it impossible to do so. Here it is perhaps correct to divide them into two groups - those who have a complete or partial disagreement with the imposed new social rules and others who, due to their social nature, will be unsuitable for the new social conditions. This mass of individuals, however, will be appreciably small to withstand the forward movement of social systems. Rather, change will only register the occurrence of such fluctuations, and new social systems will attempt to extinguish or ignore their existence. In a period of active and dynamic social transformations, social programming is an opportunity to prepare societies and enable them to rapidly adapt socially. This is of course a challenge to those who will carry out the process of social programming, as well as to those who will implement it. Both stages are essential and from their effectiveness will give a relatively good solution to the problems that have arisen or an adequate response to this process of social transformations. Social programming has performed its functions in almost all conscious social development and is based on good pragmatism. Now we have to look for solutions in this direction by preparing societies for the coming changes (Terziev and Georgiev, 2020).

4. CONCLUSION

The programmes practical realization at each of the pointed levels is not deprived of some disadvantages. Quite often, programmes elaboration is accompanied by conflict of interests between the bodies of programming and budgeting. The lack of coordination between them, the lack of clear rules and procedures for defining the financial quotas by programmes, could bring in question the objectiveness and transparency of programmes financial bond within the financial limitations. More, this might deprive them of reality and threaten their feasibility because of resource insecurity.

This is the reason for looking and giving meaning to the approaches for defining criteria and indicators for effective programme activity and management impact on society through programming (Terziev and Georgiev, 2020).

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ENVIRONMENT QUALITY AND ECONOMIC GROWTH IN MOROCCO

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ABSTRACT

Environmental preservation and economic growth are now priority research topics. The environmental, social and sound costs of the development process were one of the most crucial challenges. So, it is therefore urgent to reconcile environmental needs with economic mechanisms so that the economy is at the service of the environment and not the opposite. Environmental and economic growth are priority research topics today. The environmental, social, and Sound costs generated by the development process have been one of the most crucial challenges. So, it is therefore urgent to reconcile environmental imperatives with economic instruments to enable the economy to serve the environment and not the other way around. This work examines how economic growth affects the quality of the environment in Morocco using the Autoregressive Distributed Lag Model (ARDL), and to investigate the validity of the environmental Kuznets by applying an econometric model based on time series. The results obtained of long runs show that EKC hypothesis in Moroccan verifies the inverted U-shaped, while the short-run results reveal that the relationship follows an N-shape. The existence of EKC shows the country's effort for condensation of CO₂ emissions and indicates certain success in protecting the environment in Morocco.

Keywords: *Economic growth, Environmental quality, Environmental Kuznets curve, ARDL, Energy consumption, environmental degradation*

1. INTRODUCTION

Since the Industrial Revolution, the global economy has primarily relied on the extensive consumption of fossil fuels, including oil, natural gas, and coal. By the end of the twentieth century, the global economic growth and industrialization had led to a significant rise in atmospheric concentrations of greenhouse gases compared to pre-industrial levels (Croitoru & Sarraf, 2017). As technology and industrial activity advance, the world meets various environmental problems in different regions. As environmental problems worsen, the correlation between environmental pressure and economic growth becomes a fundamental question that requires immediate attention. In this context, the hypothesis of the curve of environmental Kuznets (Kuznets, 1955) was obvious. The hypothesis of the curve of environmental Kuznets is used to empirically model the trajectory of economic fast growth and environmental quality. However, the most part of the countries hired measurements to face up this situation, and support economic activity. These measurements led governments to rally for the conflict against climatic change and deterioration of environment that it is on the aspect national and international. In this reason, most countries have taken steps to mobilize around environmental objectives to provide immediate emergency support for economic activities (Abdelmalki & Mundler, 2010). Since the early 1990s, Morocco has been involved in several strategies and programs aimed at reducing the country's carbon footprint and encouraging green economic growth. It also hosted Cop 7 in 2001 and Cop 22 in 2016 in Marrakech.

In this sense, the Moroccan government has implemented a strategy to increase investment in renewable energies, with the aim of reaching a renewable energy production capacity of 52% by 2030. This initiative will create jobs green and reduce greenhouse gas emissions, which constitutes part of the measures necessary to achieve the objectives of sustainable development. In this frame, our job has as objective to try to answer following question: What would be the effect of economic fast growth on the quality of environment in Morocco? The answer to this question asks for an analysis deepened by the quality of environment as well as level of economic fast growth in Morocco across the validity of the curve of environmental Kuznets in Morocco. Considering our preoccupation, we try to prove the following hypotheses, which could confirm or not the existence of a relation between economic fast growth and quality of environment in Morocco:

- **H1:** Environmental pollution emissions depend mainly on income.
- **H2:** CO2 emissions positively affect economic growth.

Our article will review the literature on the relationship between economic growth and environmental quality, focusing on the Kuznets environmental curve. Secondly, we examine an empirical analysis verifying the validity of the Kuznets environmental curve in Morocco. and we conclude with a conclusion and reformulated recommendations.

2. ECONOMIC FAST GROWTH AND ENVIRONMENT

The relationship between environmental quality and economic growth was the subject of extensive study by members of the Club of Rome after the 1970s. In the "Stop Growth" report (Meadows, 2012)¹, they argued for zero growth or a stable economy to avoid dramatic environmental scenarios in the future. This debate met with numerous global environmental debates devoted to the effects of economic growth on the environment (Zaccai& Bauler, 2011).

2.1. Economic growth and environmental quality

The Meadows report; The Meadows report gave rise to a debate on growth by certain currents of thought with a vision that could be criticized on environmental grounds, which demonstrated the limits to economic growth based on the physical laws of thermodynamics and "degrowth." Georgescu-Roegen's², in his fundamental work "The Law of Entropy and the Economic Process" in 1971, considers the laws of thermodynamics, and is committed to the theory of degrowth. His work was more radical, believing that zero growth was no more sustainable than growth, and that it was therefore appropriate to seek degrowth (Kallis et al., 2012). Meanwhile, the first two principles of thermodynamics explain why the economic process itself cannot grow indefinitely. As a result, the transformation of raw materials produces a flow that economists call utility. But after use, this material is transformed into unusable waste (Georgescu-Roegen et al., 2020). In 1979, Passet criticized the degrowth thesis and demonstrated the limits of the laws of thermodynamics. According to him, "The earth is not a closed system, but rather a system open to the solar energy that flows through it, for when the earth degrades its energy, an external input can partially, totally or overcompensate for the entropy of the system" (PASSET, 1996; 2004).

2.2. Economic growth and environmental quality

The decoupling of environmental impacts from economic growth was brought to institutional level by the European Commission in 2005 and by the OECD in 2008. The latter defines decoupling as "breaking the link between environmental ills and economic goods."

¹ Meadows D. H., Meadows D. L., Randers J. (2012), Les limites à la croissance dans un monde fini, *Ecosociete*, pp 426

²Roegen N. G. (1976), *The Entropy Law and the Economic Process*, Harvard University Press, Cambridge, London, England, Tgird printing

The economist Tim Jackson in 2009, in his famous book "Prosperity without Growth", which was translated by André Verkaeren in 2017 speaks of the "myth of decoupling" and drew the attention of development actors to this notion, but he went further by marking a distinction between two forms of decoupling (relative decoupling and absolute decoupling). The absolute decoupling means that economic activities can increase while pressure on the environment remains stable or controlled, and relative decoupling, if when pressure on the environment becomes upper than that of economic activities. Indeed, the decoupling between environmental degradation and economic growth aims to decouple this dual type relationship; on the sense a decoupling between the use of a set of resources and economic growth, this is resource decoupling, and on the other sense, it is a decoupling of the impact between the impact's environmental impacts of these resources and economic growth. The analysis of economic growth and the environment based on decoupling indicators has its limits, as the pace of decoupling is horribly slower than it should be. The theories of this approach converge on another, stressing that economic growth is good for the environment and could lead to better environmental performance (Laurent, 2012).

3. METHODOLOGY

The analysis presented in this section aims to study the relationship between income and the determinants that affect environmental quality in the case of Morocco. To do this, we use a model that considers temporal dynamics in the analysis of variables, in other words, the explanation of a long- and short-term relationship. It is about the autoregressive phased delay approach or ARDL that was introduced by Pesaran and Shin (1999) and developed by Pesaran, Shin and Smith (2001).

3.1. The choice of model variables

To empirically estimate the relationship between environmental quality and income, it is appropriate to incorporate approximated variables based on the empirical literature on the environmental Kuznets curve and various studies conducted in this regard. The existence of the environmental Kuznets curve in Morocco may be influenced by energy consumption, the level of development in industrialization, renewable fuels, waste, and other factors. The selection of variables in this study was based on the economic activities in Morocco and the availability of annual data. The data utilized were sourced from the World Bank database, spanning from 1980 et 2022, resulting in a sample size of 44 observations.

Table following on the next page

Table 1: Description of model variables³

Variable	Description
CO2 emissions (CO2)	Carbon dioxide emissions measure the environmental variable expressed in metric tons (1000 kilograms) per total population.
GDP per capita (GDP)	GDP per capita is the indicator for measuring economic growth in the level of economic activity expressed in constant national currency per capita.
Energy consumption per capita (EC)	Primary energy consumption is the energy available in the form of resources. These include coal, petroleum, rock oil and natural gas products.
Renewable fuels and waste (CRD)	Renewable fuels and waste contribute to an increase in CO2 emissions and include solid biomass, liquid biomass, biogas, industrial waste, and household waste, measured as a percentage of total energy use.
Industry (IND)	Industrial activities lead to an increase in CO2 emissions, encompassing value-added activities in manufacturing, mining, construction, electricity, water, and gas sectors.
Foreign direct investment (FDI)	Foreign direct investments are measured by net investment inflows in dollars to acquire a lasting interest in an enterprise operating within an economy other than that of the investor

Source: provided by the author

3.2. Empirical Analysis and Results

This section is dedicated to empirical analysis aimed at verifying the existence of the environmental Kuznets curve in Morocco during the period 1980-2022, while also discussing the results obtained through EVIEWS software.

3.2.1. Stationarity Test

The first step in the ARDL approach begins with an analysis of the unit root properties of the variables. The fundamental goal of this test is to determine whether each of the time series variables contains a unit root or not, using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. These tests assume that the null hypothesis indicates the presence of a unit root in the series, making it non-stationary, against the alternative hypothesis that the series does not have a unit root (is stationary).

$$LCO2_t = \beta_0 + \beta_1 LGDP_t + \beta_2 LGDP_t^2 + \beta_3 LGDP_t^3 + \beta_4 LEC_t + \beta_5 LCRD_t + \beta_6 LIND_t + \beta_7 LFDI_t + \varepsilon_t(2)$$

Table following on the next page

³ These variables are illustrated by the authors based on economic activity in Morocco and the availability of annual data

Table 2: ADF unit root test results

At Level									
		LCO2	LGDP	LGDP2	LGDP3	LEC	LCRD	LIND	LFDI
With Constant	t-Stat	-1.8073	-2.0484	-1.5057	-1.0159	-3.8184	-0.9528	-1.2756	-1.0351
	Prob.	0.3721	0.2659	0.5212	0.7392	0.0055	0.7614	0.6320	0.7320
With Constant & Trend	t-Stat	-2.9830	-3.0026	-2.6805	-2.3594	-3.7384	-2.1741	-2.8030	-5.2891
	Prob.	0.1486	0.1434	0.2494	0.3946	0.0302	0.4913	0.2043	0.0005
Without Constant & Trend	t-Stat	5.6576	3.3772	3.2285	3.1461	1.8826	-2.1060	4.9240	0.9401
	Prob.	1.0000	0.9997	0.9995	0.9994	0.9842	0.0352	1.0000	0.9048
At First Difference									
		d(LCO ₂)	d(LGDP)	d(LGDP2)	d(LGDP3)	d(LEC)	d(LCRD)	d(LIND)	d(LFDI)
With Constant	t-Stat	-7.3993	-5.0743	-5.2772	-5.4383	-6.4140	-6.0151	-7.2095	-10.4789
	Prob.	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
With Constant & Trend	t-Stat	-8.0394	-5.1322	-5.2708	-5.3869	-6.7229	-5.9438	-7.2500	-10.3489
	Prob.	0.0000	0.0008	0.0005	0.0004	0.0000	0.0001	0.0000	0.0000
Without Constant & Trend	t-Stat	-1.6998	-4.2795	-4.4005	-4.4986	-6.0579	-5.6300	-1.9302	-10.4080
	Prob.	0.0841	0.0001	0.0000	0.0000	0.0000	0.0000	0.0521	0.0000

Source: based on author's calculations

Table 2, presents the results of the unit root test using the ADF method, which concludes that the variables LCO₂, LGDP, LGDP², LGDP³, and LIND are non-stationary at level I(0), but they become stationary at the first difference, I(1). Additionally, the variables LE, LCRD, and LFDI are stationary at level I(0). Since the model variables are integrated at different orders (a mix of I(0) and I(1)), this exclusively validates the use of the ARDL approach.

3.2.2. Selection of the Optimal Number of Lags

After confirming the stationarity of the variables, one of the necessary tasks is to use the unrestricted Vector Autoregressive (VAR) model to determine the optimal number of lags due to the precision it requires for the data's nature. Diagnostic tests were conducted using appropriate model selection information criteria, including the Akaike Information Criterion (AIC), the Hannan-Quinn Information Criterion (HQ), and the Final Prediction Error criteria.

Table 3: Results of optimal lag selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	211.6063	NA	6.71e-15	-9.932016	-9.597661	-9.810262
1	533.5259	502.5086	2.44e-20	-22.51346	-19.50426*	-21.41767
2	605.6446	84.43165*	2.37e-20	-22.90949	-17.22545	-20.83968
3	704.9276	77.48917	1.35e-20*	-24.63061*	-16.27173	-21.58677*

Source: based on author's calculations

The results in Table 3 indicate that the majority of the FPE, SIC, and HQ criteria suggest that the optimal number of lags is equal to 3 (VAR (P = 3)), while SC suggests a maximum lag of 1 (VAR (P = 1)). Therefore, the maximum number of lags used in modeling the long and short-term relationship in the model was 3.

3.2.3. Cointegration test

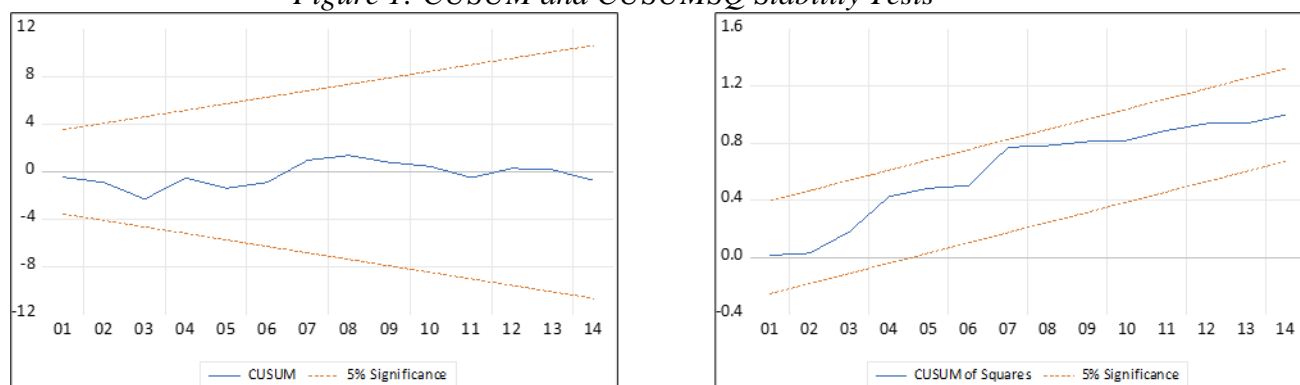
After determining the integration order of the variables and establishing the optimal lag length, the next step involves conducting the "bounds test" using the ARDL approach to empirically investigate the existence of a long-term relationship between the variables by determining the

optimal lags for each of the first differenced variables to confirm any long-term cointegration relationship between the dependent variable and the explanatory variables in the model. The decision regarding the presence of cointegration or otherwise is determined by comparing the F-statistic value with critical values. The 'bounds test' indicates that the Fisher statistic value ($F=4.609405$) is greater than the upper critical values at various significance levels (1%, 2.5%, 5%, and 10%). Therefore, the null hypothesis of no cointegration is rejected, confirming the presence of a long-term relationship between the variables.

3.2.4. Model Stability Tests

The final step in the ARDL approach involves testing the validity of the estimated model using cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests.

Figure 1: CUSUM and CUSUMSQ Stability Tests



The hypothesis of coefficient stability is confirmed if the CUSUM and CUSUMSQ test statistics do not cross the critical threshold limits. Otherwise, the hypothesis is rejected. Figure 1 shows that the results do not reveal any evidence of coefficient instability in the model throughout the analyzed period, as the CUSUM and CUSUMSQ statistics remain within the critical bands of the 5% confidence interval for coefficient stability.

4. CONCLUSION

This study is dedicated to empirically model the link between economic growth and environmental quality. The objective of this study was to examine the effect of economic growth on environmental quality and test the validity of the environmental Kuznets curve hypothesis for the case of Morocco. It also implemented an approach to forecast the evolution and impact of economic growth and other determinants related to energy consumption, industrialization, renewable fuels and waste, and foreign direct investments on CO₂ emissions during the period from 1980 to 2022. This methodological approach relies on the ARDL technique to investigate the existence of cointegration among the series and Granger causality within the VECM to test the direction of causality between the variables. The empirical results of this study confirmed the validity of the environmental Kuznets curve in Morocco in the long term, while it rejected it in the short term. In other words, this implies that economic growth deteriorates environmental quality in the short term but improves it in the long term. Furthermore, this econometric study suggests that the Moroccan government needs to implement strict and selective economic and financial policies that are environmentally friendly, additional energy-saving strategies to reduce CO₂ emissions, and rigorous and cautious environmental and energy policies to achieve sustainable development. Given the findings of this study, it is crucial for policymakers to strengthen the energy sector by reducing its environmental impact through increased energy efficiency, adopting low-emission technologies, and utilizing alternative energy options to mitigate pollutants.

Moreover, if the country aims to reduce its CO₂ emissions without harming economic growth, policymakers must strategically change the industrial structure, optimize production, and implement various instruments such as green taxation. Finally, adopting appropriate environmental protection and natural resource preservation policies is essential to achieve environmental goals for sustainable development and the green economy in Morocco.

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DIGITIZATION AS A TOOL OF STRATEGIC DEVELOPMENT OF COMPANIES IN THE FUNCTION OF CREATING SOCIAL RESPONSIBILITY

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ABSTRACT

Given the growing amount of internal and external data available to companies and the benefits and challenges that this data provides to decision makers, there is a need for functions that through their activities can guide management to make effective business decisions. One of these functions is the control of business decision-making, which provides adequate information to decision makers, i.e. who in a large amount of data select and analyse key ones, interpret them, conclude and propose solutions. In accordance with its role, controlling business decision-making should be one of the key information and advisory functions within the company in the function of creating added value. The aim of this paper is to define and confirm the role and importance of digitalization as a tool of strategic development and its impact on business decision making management, and also point out the importance of control of collected information in achieving strategic and operational goals. Furthermore, the aim of this paper is to make the business decision-making process more efficient, given the growing impact of digitalization, the availability of large amounts of data and tools that enable easier processing.

Keywords: digitalization, business decision making, business decision control, management

1. INTRODUCTION

The digital environment makes it possible to dispose a large amount of information that becomes important input in the creation of added value. Due to increasingly rapid changes in the environment, the success of companies depends more than ever on making the right decisions based on quality data and information. That is, company management significantly depends on the quality of data processing in order to obtain quality information that is used in the business decision-making process. Today's business becomes almost impossible without the introduction of new technologies and adapted functions co-responsible for company management. Controlling, primarily as an informative-analytical and advisory function that combines analysis, control, planning and reporting, provides management with the best possible solutions to the challenges that arise within and outside the organizational environment (Vitezić, 2008). While decision-making represents the process of creating value for business, through planning, control and performance evaluation (Mihăilă, 2014), controlling as a professional function has the task of providing information that will help managers make correct and timely decisions (Burns et al., 2013 in Gärtner and Hiebl, 2018) and create added value. Therefore, controlling in today's conditions of business represents an indispensable

management function where the controller as an internal economic expert, business analyst, consultant and partner has the task of advising and directing management towards the achievement of set strategic and operational goals through the analytical processing of collected information (Vitezić, 2011). In doing so, the controllers use numerous internal and external data and information as inputs within the created analyzes and reports, i.e. outputs, which submit to managers as a result of their activities. Given the growing influence of digitization, the availability of large amounts of data and tools that enable simpler processing and the creation of quality reports, it is up to the controller to adapt and accept the advantages that will allow him to fully realize his role as a business partner. In recent literature, the impact of the digital revolution on the world of work is widely discussed. Different authors highlight various drivers of changes in the world of work. Thus, for example, Eurofound identifies three main directions of change, with the potential to radically change work and employment in a technological and social sense. The first one refers to the automation of work, that is, to the replacement of human labor by the work of (digital) machines with regard to certain tasks within the production and distribution process. The technology that enables the automation of work in the digital age includes: advanced robotics, artificial intelligence and machine learning. Although the automation of work as a phenomenon is much older than the digital revolution, the aforementioned new technologies allow machines and robots to perform tasks that were previously considered unsuitable for automation. Furthermore, the role of artificial intelligence is particularly important, which is slowly taking over activities for which, until recently, human reasoning power and experience were necessary. So the automation of work is not a new phenomenon; it is a new fact that the use of digital technologies significantly expands the range of work tasks that can be performed by machines. Another driver of change in the world of work is, according to Eurofound, the digitization of processes. Digitization of the process implies the use of devices that convert analog to digital information (sensors) and devices that convert digital to analog information (rendering devices) in order to translate (parts of) the physical production process into digital information and vice versa. At the same time, a much more efficient and cheaper possibility of processing, storing and communicating via digital information is used. By digitizing the process, it can be managed and controlled much more efficiently. The key technologies driving the digitization of economic processes are: the Internet of Things, 3D printing, and virtual and augmented reality.

2. LITERATURE REVIEW

With globalization and the strengthening of market competition, companies today face the need for quick decision-making, continuity of innovation and finding a strong connection between quick decision-making, innovation and market share growth, because it is increasingly clear that long-term success comes from the ability and flexibility to adapt to market needs, that is, consumers (Thompson et al., 2013, p. 936). The greater dynamism and complexity of jobs is a consequence of the influence of digital technology on business activities that require new organizational models, defining a new vision and mission and influencing changes in the market and society in general (De Bernardi et al., 2019). Digitization and the fourth industrial revolution have called into question many business strategies and the way organizations function (Rachinger et al., 2019, p. 1144), they have influenced the reshaping of traditional business models, strategies and processes, creating opportunities for the development of new products and services, aligned with the needs and demands of consumers (De Bernardi et al., 2019). Empirical research that includes digital transformation and new concepts arising from it (e.g. Big Data, applications, platforms, information systems), which are closely related to the impact of the quality of the information system on the efficiency of the work of employees and the impact on the success of the company, have mostly been realized in the field of informatics, while in the field of management they are represented in theoretical frameworks.

In their work, Nwankpa and Roumani (2016) proved that digital transformation has a significant positive impact on the innovation and success of business operations, whereby digital transformation is defined through the level of application of digital technologies by the company. Digital technologies include social networks, big data, business analytics, cloud and mobile technology. El Hilali et al. (2020) confirmed the positive connection between the use of Big data and sustainability measured through the impact of digital transformation on certain elements of the company, such as market shares, economic benefit, company image, etc. Namely, the data that is available within the company today is not sufficient to achieve and maintaining the company's competitive advantage and for quality business decision-making. Therefore, it is important that when making a business decision there is an organizational possibility to access the mentioned digital technologies and that the organization itself develops in accordance with them. In addition, the availability of big data also emphasizes the need to highlight certain managerial characteristics such as analytical, creativity and proactivity. Globalization and rapid technological changes, as well as openness to the global market, have led to an increasing need for companies to adapt to their own environment. By looking at numerous researches, it can be concluded that the influence of the characteristics of the environment is mainly reduced to the analysis of the characteristics of globalization and related technological changes. That is, different combinations of factors of the external environment appear, which relate to market dynamism, hostility, uncertainty of changes, competitiveness, rate of environmental change, complexity and level of technological changes. Thus, for example, Haldma and Lääts (2002, in Lindelöf and Löfsten, 2006) emphasize unpredictability and a hostile environment as the most frequently researched factors of the external environment, while others believe that the complexity and dynamism of the environment are more important. The method and speed of information exchange, as well as the quality of information itself, along with adequate organizational implementation of digital solutions, lead to a greater degree of connectivity of business processes. Organizations that are oriented towards an innovative way of doing business, in terms of developing new products and services, more innovative ways of approaching consumers, and seeing and meeting needs in a more innovative way, are organizations that appear on the market as leaders, because they manage to generate knowledge in terms of innovation and in this way, they stand out from the crowd (Thompson et al., 2013, p. 9).

3. DIGITIZATION, BUSINESS STRATEGY AND DECISION-MAKING

Companies, regardless of size and/or activity, are increasingly faced with the problems of growing competition due to the emergence of new companies and new market forms that base their business on digital technology. Such companies understand digitization as a strategic commitment and an alternative to existing strategies. Digitization today is becoming a condition for survival in the growing market competition, considering that research shows that companies that do not invest in innovative ways of doing business in an amount that is average for a certain industry, have lower productivity, higher costs and higher prices of their products and services. The fourth industrial revolution initiated significant changes in the structure of the value chain, and according to research by the World Economic Forum, technology and innovation make up 20% of the total driving force of an organization and contribute to productivity by supporting the adoption of new information and communication technologies (WEF, 2018). In this way, technology and innovation have become one of the criteria for ranking countries, according to which the USA, the United Kingdom, Switzerland, the Netherlands, Finland, Singapore, Sweden, Germany, Hong Kong and Canada, which are ranked in the top 10 out of a total of 100 countries and which were the subject of research, are considered leaders in technological innovation.

The value of data has become a key business resource through which companies acquire valuable knowledge on the basis of which they can make important business decisions, and therefore quality decisions regarding products, services, employees, strategies, etc. Judging by current trends, there are no indications that in that sense be a change. What is a curiosity of the present time is the fact that certain studies show that 90% of the world's data was created in the past year, while another curiosity is that studies also show that only 1 percent of all this collected data is used effectively. Current market leaders, such as Microsoft Salesforce and others, base their leadership position on the concept of turning data into meaningful business analytics, although many organizations still do not understand the true power and power of data and the real reasons for collecting it. In any case, there has been a significant improvement in the field of data processing that can increase the degree of machine learning, so the trends in this regard quite logically indicate that digital managers will invest even more in the creation of data in order to improve the effects of machine learning and the development of artificial intelligence. Capable employees who develop new technological ideas and digitally innovate company operations have become a key asset in the knowledge-based digital economy that develops socially responsible business. The challenge to respond to the imposed technological trends of digitization and remain competitive in the conditions of the ever-increasing rise of digital technology imposes the need for digital transformation of the entire business. Digital transformation refers to the process that starts from the moment the organization starts thinking about the introduction of digital technologies in all areas of business, and lasts until the moment of their complete integration. (Wade, 2015) believes that digital transformation is organizational change through the use of digital technology and business models to improve business performance. Digital transformation is a complex, dynamic, continuous process in the digital era, which can be argued to actually be a process of transforming all organizational aspects, supported by the strategically designed integrated application of modern digital technologies. Most authors (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2013; Rogers, 2016; Bonnet & Westerman, 2021) state that digital transformation should result in the creation of a new business model and the positioning of consumers at the centre of all activities and decisions made by the organization, and in all in order to create conditions for the improvement of innovations, better market positions, and therefore the improvement of overall business results. The transformation of business models takes place through the digital modification of business, i.e. through the transformation of physical into digital products through the addition of digital content to existing products and services, and through the creation of new forms of digital business, i.e. through new business based on the development of digital products and the introduction of new digital solutions and , as a consequence, redefining organizational boundaries and through digital globalization. The transformation of the employees' experience takes place through the acceptance of changes and the adoption of knowledge, innovative behavior and abilities of employees regarding the use of digital technologies that will help companies achieve a sustainable competitive advantage in the future. Companies are considering the possibilities of using robotics and other digital technologies with the aim of increasing employee productivity and improving performance, but also enabling people to work faster, smarter and safer (Bonnet & Westerman, 2021). Transformation of digital platforms, as forms of digital business models, are closely related to the development of digital ecosystems (de Reuver, Sorensen, & Basole, 2018), i.e. they represent a key element around which successful digital ecosystems are built (Valdez-De-Leon, 2019). An ecosystem can be considered as an established network of values where the roles of the stakeholders are intertwined and where the related stakeholders achieve joint development. The modern competition is no longer between individual companies, but between networks of companies.

Many of these networks of modern companies are intertwined around digital platforms, which, by connecting numerous interested stakeholders, enable the formation of so-called digital ecosystems.

4. MODELS OF CHANGE MANAGEMENT IN THE ORGANIZATION

Change management models provide organizations with a structure, theoretical framework and practical guidelines for better understanding and effective management of change processes. Their main goal is to provide guidelines for implementing changes, managing transformation processes, and ensuring acceptance and implementation of changes in practice. In this research, the models that are often referenced and recognized in the academic literature, related to the traditional approach to change management, are highlighted (Gutić Martinčić, 2021). Understanding the importance of identifying the need for change, implementing and leading changes in the organization are key elements for achieving organizational success. Change is an indispensable aspect of the life of every organization, its employees, products and services. Managing change and organizational development would not be so important if products and markets were stable and changes in the organization were rare. The process of change in an organization is defined as a process that redirects the current state of the organization towards the future desired state, and includes the acceptance of new organizational behaviors or new ideas. The process of change and implementation of innovations requires a certain period of time, which may vary in duration depending on the type of change and its complexity. Different types of organizational changes are classified with respect to what is being changed or the subject of the change, and with respect to the type or scope and intensity of the changes. The use of a management model is very important, so that organizations can focus on important variables in the organization, because the development of the organization itself is a very responsible and complex job. When choosing a management model, it is not good to choose an overly simple model, nor an overly complex one, because a simple model may omit important dimensions of the organization and not show the real situation, while an unnecessarily complex model may be incomprehensible and unclear to the members of the organization, who in the end have to choose a model that is most similar to the actual state of the organization. (Sikavica, 2011)

5. DATA CONTROL IN THE FUNCTION OF ACHIEVING CORPORATE SOCIAL RESPONSIBILITY

According to the work of Bhimani and Willcocks (2014), controllers must be able to recognize the potential and value of unstructured data and its impact on the financial perspective of the business. By analysing all available data provided by Big Data, among which external data stands out as a novelty, controllers have the ability to obtain, i.e. provide information to management that far exceeds traditional management dimensions. Therefore, in the future, it is expected that an increasing share of reporting will go to external information (Grönke et al., 2014). If they are not already, they will become the main source of the company's competitive advantage, and the controller's role as one of the internal data collectors will be significantly reduced and replaced by their use for forecasting purposes. Due to the rapidly changing environment and the need for forecasting, the controller will be expected to become an analyst of external data in real time, in addition to being an analyst of historical data. They will have to be able to quickly recognize the data that is needed for the company, determine how to analyze it and what actions to take based on the results obtained (Gray and Alles, 2015). All of the above requires controllers to adapt and embrace new knowledge and skills that will ensure their role as a business partner to management. According to the so-called Stress Management Competencies Indicator Tool (SMCIT) set by Yarker and colleagues in 2008, managers must be responsible and respect others, be able to manage difficult situations and

communicate current and future events. Using the mentioned instrument, Toderi and Balducci (2018) proved the positive influence of these characteristics on the well-being of employees, which could further be connected with the results of the research by Lee and Ravichandran (2019), who proved that the well-being of employees positively affects their work performance. A prerequisite for successful controlling is that it is really desired by managers. There should be trust between the controller and the manager (Hirsch et al., 2015), i.e. the manager must have confidence in the controller's work (Nitzl and Hirsch, 2016). The way to achieve such a relationship is first of all to respect the controller as a business partner, i.e. controlling as an informative and advisory function and profession. Such an effect was proven by Clarke and Mahadi (2017), i.e. Clarke et al. (2019), whereby the so-called professional respect/appraisal respect is defined as the degree to which an individual recognizes and admires the business-related competencies and knowledge of other persons. By business partner, it is understood that controlling is in constant contact with management for the purpose of making business decisions (Schäffer, 2017) and that as a proactive co-bearer of responsibility and proposer of changes through in-depth analysis of information, he initiates and leads changes within the company (Deinert, 2013). That is, that controlling as a relationship between manager and controller is oriented towards the joint achievement of goals, whereby the manager bears full responsibility for the results but also has the role of motivator, and the controller is responsible for the integrity of the data and the correctness and reliability of the created outputs (Weber and Schäffer, 2014). Only by accepting controlling as a significant function and a possible profession by managers can the highest level of controller effectiveness be ensured in terms of fulfilling the role of a business partner.

6. RESEARCH METHODOLOGY

In order to clearly define the problem and the subject of the research, it is necessary to thoroughly analyse the existing literature in the research domain. The research includes the analysis and determination of relationships between the application and implementation of digital transformation, the role and significance of control, decision-making, and achievement business results and market performance and socially responsible business. The main goal of the research is to identify and define influential relationships between measured factors (implementation of digital business transformation, decision-making, role and importance of control and business results and socially responsible business).

The specific objectives of the research include:

- Research and understanding of the relationship and impact of the application of digital transformation on business results and market performance.
- Research and understanding of the relationship and impact of digital transformation control management on business results and market performance for the purpose of achieving corporate social responsibility.

In accordance with the above, the following hypotheses were set:

- **Hypothesis H1:** There are statistically significant relationships between digital transformation control management and business results and market performance.
- **Hypothesis H2:** There are statistically significant relationships between decision-making and the achievement of corporate social responsibility.

In the framework of this work, through the conducted research, in addition to the mentioned business and market factors, data related to the socio-demographic characteristics of the respondents were also collected. Namely, the respondents - company managers, provided data on gender, number of years of education and the managerial position they hold.

Furthermore, in order to identify the potential characteristics of the company, data related to the size of the company (based on the number of employees) and the ownership structure of the company (private or state). The research was conducted in the period from October to December 2023 in micro, small, medium and large enterprises in the Republic of Croatia. Part of the questionnaire in electronic form was sent to the e-mail addresses of respondents - company managers, while part of the questionnaire was administered in person. As stated, the respondents in the research are managers in micro, small, medium and large companies in the Republic of Croatia. A total of 184 correctly filled questionnaires (N=184) were collected. Of those 184 respondents, 120 (65%) are men, and 64 (35%) are women. Of the 184 companies managed by respondents/managers, 126 (68.5%) are private and 58 (31.5%) are state-owned. The reliability of the obtained factors was measured based on the value of the Cronbach's Alpha coefficient. For the purposes of factor analysis, the reliability of the data was tested using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test. Finally, through multiple regression analysis, the statistical dependence of the research variables is determined. Cronbach's Alpha is a statistical index that measures how well all elements within the instrument are interrelated and whether they measure the same latent variable. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity are often used as diagnostic tools to assess the suitability of the factor analysis correlation matrix shown in Table 1. The value of the Kaiser-Meyer-Olkin indicator ranges from 0 to 1, and if it is less than 0.6, it is considered that the correlation matrix is not suitable for regression analysis. Also, the value of the Kaiser-Meyer-Olkin indicator closer to 1 is the greater suitability of factor analysis. With Bartlett's test, it is desirable that the significance value be less than 0.05. A low p-value suggests suitability for factor analysis.

No.		Factor			Descriptive statistics	
Questions related on the connection between digital transformation and business improvement						
		1	2	3	Arithmetic mean	Stan. dev.
1.	Employees must be rewarded in accordance with their contribution to the company	.809			3.662	0.628
2.	Employees must have the opportunity to develop skills and knowledge as well as the opportunity advancement	.806			3.719	0.799
3.	Human resource management should focus on employee satisfaction and to optimize the relationship between employee compensation and their contribution to results business	.804	.369		3.822	0.637
4.	It is necessary to establish a quality management system and implement business processes within its framework;	.643	.482		3.944	0.745
5.	In accordance with the financial, human and infrastructural capabilities of the company must consider investing in the development and research of products, services or improvement of business processes	.607		.354	3.9588	0.787
6.	Companies must invest in a marketing strategy and apply modern ones management methods and techniques;	.514		.424	3.434	0.879
7.	Companies should consider the application of digital transformation in production processes and other business processes in order to make faster and more effective decisions;	.401	.374	.328	3.328	0.910
8.	The application of digital transformation in the quality department must aim to determine perceived quality and compare it with objective quality		.819		3.687	0.753

9.	Effective and timely decision-making contributes greatly improving business results due to dynamic changes in the market to which you need to respond quickly		.707	.318	3.323	0.793
10.	Long-term planning with optimization of sub-plans and their flexibility is necessary when defining business activities	.328	.698		3.115	0.995
11.	The implementation of digital systems requires certain financial, human and infrastructural resources, and therefore fundamental planning and monitoring of the implementation process of digital transformations is necessary	.434	.654		3.908	0.828
12.	Market globalization has contributed to the intensification of competitive relations on the market		.606	.313	3.284	0.954
13.	Globalization of the market contributed to the fact that companies must consider all possibilities of cooperation with other stakeholders in order to reduce the negative impact of the new business paradigm and achieve the sustainability of the business system;		.507	.487	3.398	0.879
14.	Digital transformation technologies have significant potential in the domain of business improvement			.809	3.875	0.976
15.	In order to achieve personal responsibility, it is necessary to carry out strategic planning.			.742	3.354	0.961
	Variance explained	42.54	10.31	8.46		
	Cronbach's Alpha	.858	.821	.698		
KMO = 0.841; Bartlettov test p < 0,000; Total explained variance 61.312%						
Questions related to the role and significance of the controller and the implementation process of digital transformation						
1.	Digitization has changed the traditional function of controllers in business	.862			3.498	0.914
2.	Controllers can use digital tools and technologies to improve the efficiency and effectiveness of their processes	.913			4.306	0.937
3.	Digital transformation can be used to improve the controller's analytical abilities and make informed business decisions	.804			3.923	0.926
4.	Digital technologies can facilitate the audit process and audit activities	.898			2.314	0.890
5.	Digitization can be used to better monitor and manage the organization's financial and non-financial performance	.703			4.103	0.758
	Cronbach's Alpha	.891				
KMO=0.821; Bartlettov test p < 0,000; Total explained variance 70.474%						
Questions related to the connection between digital transformation and socially responsible business						
1.	Digital transformation can improve corporate social responsibility	.824			4.624	0.910
2.	Digital transformation reduces the negative impact of business on the environment	.868			4.551	0.926
3.	Digital platforms encourage inclusivity and diversity in the business environment	.830			3.165	0.935
4.	Digital transformation can improve supply chain transparency and encourage ethical business	.787			4.679	0.932
5.	Digital technologies support socially responsible initiatives and projects	.832			4.775	0.951
	Cronbach's Alpha	.882				
KMO=0.848; Bartlettov test p < 0,000; Total explained variance 68.620%						

Table 1: Descriptive and factor analysis
 Source: author's own work

Descriptive analysis, the basic statements made by managers, and the standard deviation and average values were calculated and shown as such in Table 1. The results of the descriptive analysis show that managers assess the extreme importance of digital transformation and socially responsible business. They consider these two key aspects of modern business, which are often interconnected. The first group of questions is focused on the connection between digital transformation and business improvement, and according to the presented results, the following stand out: *"Employees must be rewarded in accordance with their contribution to the company"* (arithmetic mean = 3,662 standard deviation = 0.628, Cronbach Alpha coefficient = 0.809); *„Human resource management should focus on employee satisfaction and to optimize the relationship between employee compensation and their contribution to results business“* (arithmetic mean = 3,822, standard deviation = 0.637, Cronbach Alpha coefficient = 0.804). The second group of questions is related to the role and significance of digital transformation in the company, which the respondents evaluated as follows: *„Digitization has changed the traditional function of controllers in business“* (arithmetic mean = 3,498, standard deviation = 0.914, Cronbach Alpha coefficient = 0.862); *„Controllers can use digital tools and technologies to improve the efficiency and effectiveness of their processes“* (arithmetic mean = 4.306, standard deviation = 0.937, Cronbach Alpha coefficient = 0.913); *„Digital transformation can be used to improve the controller's analytical abilities and make informed business decisions“* (arithmetic mean = 3,923, standard deviation = 0.926, Cronbach Alpha coefficient = 0.804) and *„Digitization can be used to better monitor and manage the organization's financial and non-financial performance“* (arithmetic mean = 4.103, standard deviation = 0.758, Cronbach Alpha coefficient = 0.703). The third group of questions served as a starting point for researching the connection between digital transformation and socially responsible business and for understanding how technology can be a catalyst for positive changes in society, and the respondents gave the following answers: *„Digital transformation can improve corporate social responsibility“* (arithmetic mean = 4.624, standard deviation = 0.910, Cronbach Alpha coefficient = 0.824); *„Digital transformation reduces the negative impact of business on the environment“* (arithmetic mean = 4.551, standard deviation = 0.926, Cronbach Alpha coefficient = 0.868); *„Digital transformation can improve supply chain transparency and encourage ethical business“* arithmetic mean = 4.679, standard deviation = 0.932, Cronbach Alpha coefficient = 0.787); *„Digital technologies support socially responsible initiatives and projects“* (arithmetic mean = 4.775, standard deviation = 0.951, Cronbach Alpha coefficient = 0.832). Company characteristics in the form of business strategy, level of formalization, quality of the information system and readiness to apply digital technologies have proven to be significant factors of controller output quality. Accordingly, controllers should be actively involved in determining the company's strategic orientation, its mission, vision, goals and strategy of the company, but also in the development of administrative mechanisms formalizations such as rules and procedures, authorization levels, tasks and responsibilities. Their role would be more successful if they were involved in evaluating and making suggestions for improvement of existing information systems as well as implementation proposals new systems based on digital technology that enable the launch of new i improvement of existing business processes. Although the research revealed that controllers to managers through reports submit various non-financial data and data related to the future events, as the least represented information about factors outside was confirmed companies. Considering that the significance was confirmed through the conceptual model environment, i.e. competitiveness and technological turbulence, controllers would in the future in accordance with the needs of predictive and prescriptive analytics, should have paid more attention external business factors. External factors in today's fast-growing environment represent the key to survival and achieving a competitive advantage.

Therefore, controllers should first of all focus on the analysis of competitors through, for example, more frequent the application of benchmarking analysis, but also the monitoring of the level of changes and technological influences innovation on the company, the branch in which it operates and the controlling function itself in view opportunities provided by technologies in the field of more efficient use of data in analysis and decision-making. Although this research deals with important issues that have practical implications and significant value for the field of controlling and management, the role and significance of digital transformation, and the connection of digital transformation with socially responsible business, the fact is that the research is limited on the sample of one country. Future studies in different business and cultural settings are needed in order to improve the theoretical and practical contributions of the results and conclusions of this study. Furthermore, the survey only included controllers and managers who volunteered participate in the research and therefore it can be assumed that the survey was completed by those controllers and managers who really execute and understand the role and significance of the controller within the company.

7. CONCLUSION

Today's companies enable the use of large amounts of data thanks to the digital transformation, but also precisely the digital transformation forces them to find methods, technologies and knowledge that enable this data to be collected, structured and analysed in a way that is suitable and useful for efficient and effective decision-making, and above all, socially responsible business. Therefore, those who make decisions need methods and skills that enable the transformation of data and information into knowledge, which is the basis of successful business. Controlling, as one of the recognized functions that contributes not only to effective decision-making, but also to the overall operation of the company, is precisely the one that helps the company grow and develop in a rapidly changing environment and achieve its own social responsibility. As an information and advisory function, it is primarily focused on the analytical processing of data and information for making business decisions, through which it helps management achieve set goals and adapt the company to internal and external influences, and to achieve its own socially responsible business.

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PREPAREDNESS OF THE GLOBAL HEALTH SYSTEM FOR NEW DISASTERS RELATED TO NATURAL HAZARDS

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ABSTRACT

Disasters from natural hazards, worsened by climate change, continue to threaten global health and well-being. The COVID-19 pandemic highlighted the need to prepare for disease outbreaks alongside disasters. The role of the World Health Organization (WHO) in emergencies is to ensure preparedness to reduce public health risks in highly vulnerable countries and deliver life-saving health services to populations affected by ongoing crises. Health emergency and disaster preparedness involves the knowledge and skills needed to effectively anticipate, respond to, and recover from the impacts of potential, imminent, or current hazardous events or conditions. A resolution is a formal agreement or decision by the WHO Member States acting as an international policy instrument to make political commitments and request action from the member states and the WHO Director-General. Based on its experience with the COVID-19 pandemic and 2020 earthquakes, Croatia advocates for stronger cooperation among member states to enhance health system resilience during natural disasters. The last major resolution on this was adopted by the 64th World Health Assembly (WHA) in 2011. In response to the rising frequency and severity of such disasters, Croatia and Core Group member states proposed a new resolution, "Strengthening Health Emergency Preparedness for Natural Hazards Related to Disasters," which was adopted at the 77th WHA in 2024. This resolution aims to renew commitments, advance strategic dialogue, and maintain political and financial support for this priority area. It does so with a careful approach in the detailed selection and inclusion of extremely important tasks for Member States and the WHO Director-General, developed through planning, archival research, outreach, and stakeholder negotiations. It is historically significant for Croatia as the proposer of this WHA resolution.

Keywords: *disasters, earthquakes, natural hazards, resolution, World Health Organization*

1. INTRODUCTION

Proposing a new resolution for adoption at the World Health Assembly (WHA) in 2024, Core Group member states led by Croatia aim to strengthen preparedness for health emergencies arising from natural hazards. Croatia's intention to develop a new important document for the global health system is based on its experience in responding to the convergent health threats of the COVID-19 pandemic and the earthquakes in Zagreb and Petrinja in 2020. It is of historical importance for Croatia that it is the proposer of the resolution to the World Health Organization (WHO). In this article, the authors will provide an overview of the current high-risk situation in the global health environment in light of the imperative to recognize the importance of emergency health preparedness for new health threats due to more frequent and converging disasters related to natural hazards.

The process of proposing a new WHA resolution follows a specific strategy imbued with different diplomatic skills. This strategy includes the planning and timetable of the process, review of archival documentation, outreach to stakeholders through bilateral and multilateral consultations, and final official negotiations of all WHO member states in the direction of establishing a consensus on the content of the final document that will be submitted for adoption by the WHA. Using the example of Croatia's proposal for a new WHA resolution "Strengthening Health Emergency Preparedness for Disasters Related to Natural Hazards," this article will provide an overview of a wide range of diplomatic activities and relations in a multilateral environment under the umbrella of the WHO.

2. NATURAL DISASTERS

Disasters pose significant challenges for communities worldwide, arising from various natural hazard events and emphasizing the need for effective risk management strategies. Natural hazards are natural phenomena that can negatively impact humans, other animals, or the environment (Organization of American States, Department of Regional Development, 2000). According to Burton, Kates and White (1993) natural hazards can be classified into two broad categories: geophysical and biological, and include avalanches, coastal flooding, cold waves, heat waves, earthquakes, hail, tropical cyclones, ice storms, landslides, lightning, riverine flooding, strong wind, tornado, tsunami, volcanic activity, wildfire, winter weather, and dust storms (National Risk Index of FEMA). Additionally, natural hazards can be influenced or triggered by human activities such as land-use changes, drainage, and construction (Gill, Malamud, 2017). A disaster occurs when a natural or human-made hazard impacts a vulnerable community. It is the combination of the hazard and the exposure of a vulnerable society that results in a disaster. In modern times, it is increasingly difficult to find the distinction between natural, human-made, and human-accelerated disasters (Smith and Neil, 2006). Human choices and activities such as architecture, fire management, resource management, and climate change can contribute to natural disasters (Coburn, Spence and Pomonis, 1992). According to media platform openDemocracy (2017) factors like inadequate building norms, marginalization, inequities, overexploitation of resources, extreme urban sprawl, and climate change can exacerbate natural disasters. The rapid growth of the world's population, often in hazardous environments, has escalated both the frequency and severity of disasters. Extreme climates, unstable landforms, deforestation, unplanned growth, and non-engineered constructions create more vulnerable interfaces between populated areas and disaster-prone natural spaces. According to Zorn, Pelc and Koderman (2018) developing countries, which often suffer from chronic natural disasters, may have ineffective communication systems and insufficient support for disaster prevention and management. The consequences of natural disasters can be severe, including loss of life, displacement of populations, destruction of infrastructure, and economic hardship. The extent of the damage depends on various factors, including the resilience of the affected population and the availability of resources (The International Federation of Red Cross and Red Crescent Societies (IFRC)). Recognizing the interaction between hazards and vulnerabilities is crucial for understanding and mitigating disaster risk. By acknowledging the complex factors at play, communities can better prepare for and respond to disasters, mitigate their effects, safeguard vulnerable populations, and reduce their impact on society. According to Wisner, Blaikie, Cannon and Davis (2004) an adverse event will not rise to the level of a disaster if it occurs in an area without a vulnerable population. Once a vulnerable population experiences a disaster, it can take many years for the community to recover, and this period can lead to further vulnerability. The consequences of natural disasters also affect the mental health of affected communities, often leading to post-traumatic symptoms. According to Kieft and Bendell (2021) these emotional experiences can be mitigated through collective processing, leading to resilience and increased community engagement.

Natural hazards exacerbated by climate change continue to pose significant threats to global health and well-being. It has been over a decade since yet the strengthening of our health system's preparedness for disasters resulting from natural hazards continues to fall behind. The recent devastating earthquakes in Turkiye and Syria in 2023, and Afghanistan and Syria in 2022, floods in Pakistan, Tropical Cyclone Freddy in Mozambique and Madagascar, droughts affecting the greater horn of Africa region, and heatwaves in Europe are just some examples of high-impact natural hazards related disasters in 2022 and 2023. The COVID-19 pandemic has underscored the need to plan and prepare for the impacts of disease outbreaks in combination with disasters.

3. EARTHQUAKES IN ZAGREB AND PETRINJA 2020.

According to World Health Organization earthquakes can strike suddenly without warning, causing violent and abrupt shaking of the ground due to tectonic plate movements along fault lines. They can result primarily in ground shaking, soil liquefaction, fissures, avalanches, fires, and secondarily in landslides and tsunamis. The destruction and harm caused by an earthquake depend on factors like magnitude, intensity, duration, local geology, time of day, and building design. From 1998 to 2017, earthquakes caused nearly 750,000 deaths globally, accounting for over half of all deaths from natural disasters. More than 125 million people were affected, including injuries, homelessness, displacement, or evacuation. Health threats from earthquakes vary with the earthquake's magnitude, the built environment's quality, and secondary effects, and have immediate, medium, and long-term health impacts. Immediate impacts include trauma-related deaths and injuries from building collapses and secondary effects like drowning from tsunamis or burns from fires. Medium-term impacts include secondary infections of untreated wounds, increased morbidity, and pregnancy complications due to disrupted obstetric services, and increased risk of communicable diseases in overcrowded areas. There are also long-term risks of chronic disease complications due to treatment interruptions, increased psychosocial needs, and potential environmental contamination from industrial infrastructure damage. Earthquakes also damage health facilities and transportation, disrupting service delivery and access to care. Health workers may struggle to reach operational health facilities, and medical supplies may be lost. On the morning of March 22, 2020, at around 6:24 a.m. CET, an earthquake struck Zagreb, Croatia, with an epicenter 7 kilometers (4.3 miles) north of the city center. The maximum intensity was VII–VIII (very strong to harmful) on the Medvedev–Sponheuer–Karnik scale. Numerous aftershocks followed, the largest being magnitude 5.0. (Seismological service of the Faculty of science and mathematics in Zagreb). It was the biggest earthquake in Zagreb since 1880, causing considerable damage to the historic city center. At this moment, the Croatian health system was fighting in parallel with the COVID-19 crisis, which was then only in its beginning. Then, a new series of earthquakes occurred at the end of 2020 and the beginning of 2021 in Sisak and Petrinja, cities only 50 kilometers from Zagreb, which were of great destructive power, so the ground shaking was felt with less damage in Zagreb and the wider area of the northern part of Croatia. Over 1,900 buildings were reported to be severely damaged. Preliminary estimates indicated that 214 healthcare facilities were affected, including the evacuation of the city's largest maternity hospital and damage to many buildings in the University Hospital Center Zagreb complex. The earthquake disrupted access to public services, particularly healthcare and education, impacting 1,424,327 patients and more than 2,739 medical and non-medical personnel. Educational institutions also suffered significant damage, including the Faculty of Medicine of the University of Zagreb, 20 other university institutions, 23 primary schools, 2 secondary schools, and 18 institutes. At least 9,538 students and staff were affected, with the total rising to over 10,000 when including additional employees. One person died, and 27 were injured (Earthquake in Croatia in December 2020, Quick assessment of damages and needs, 2021).

Direct damage in Zagreb and Krapina-Zagorje County was estimated at HRK 86 billion (EUR 11.5 billion). The earthquake occurred during the coronavirus pandemic, complicating social distancing measures prescribed by the Croatian government. At that time, COVID-19 became a serious public health crisis; the vaccine had just arrived in Croatia and was supposed to protect the health and lives of people affected by the earthquake, in temporary accommodations, with different health statuses, emergency services workers, and volunteers who came to help remove the ruins, rescuing patients, and moving them from the hospital in Sisak to surrounding health facilities. Vaccination against COVID-19 was carried out in these field conditions. The arrival of the vaccine in Croatia was one of the results of joint action at the level of the European Union and the whole world, and crisis management was one of the biggest public health global challenges in the recent history of healthcare. At the same time, togetherness, leadership, and making brave and timely decisions were essential for protecting the health and life of the world's population, which WHO experts and their colleagues in every single country of the world encountered.

4. WORLD HEALTH ORGANIZATION

The World Health Organization (WHO) is the guiding and coordinating body for health within the United Nations system. It is responsible for leadership on global health issues, the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries, and monitoring the shaping of health trends. The WHO team consists of over 8,000 professionals, including doctors, epidemiologists, scientists, and managers, who coordinate global health responses, promote well-being, prevent diseases, and improve access to healthcare. By connecting nations and partners to reliable scientific evidence, they strive to ensure everyone has an equal opportunity for a safe and healthy life. Committed to integrity and excellence, WHO professionals are trusted to care for global health with collaboration and scientific dedication (World Health Organization). WHO, an organization of 194 Member States, elects a Director-General to lead in achieving global health goals. The Secretariat, including experts, staff, and field workers, operates from the Geneva headquarters, six Regional Offices, and other locations in over 150 countries. WHO supports Member States in achieving the highest health standards, advising ministries of health and other sectors on public health issues, and assisting with health program planning, implementation, and monitoring. With strong connections between offices, WHO operates on the front lines in over 150 locations across six regions (World Health Organization). The Director-General sets the vision and oversees international health efforts, while Regional Directors lead the work of the Regional Offices and country offices, closely collaborating to implement strategies and programs throughout the organization (World Health Organization). According to (Global Health NOW (GHN)) the World Health Assembly (WHA) is WHO's top decision-making forum, where delegates from all Member States meet annually to set global health priorities. Country representatives consult to establish new health objectives, targets, and strategies, endorsing resolutions that guide countries, WHO leadership, and stakeholders. The Assembly sets WHO's direction, operational policies, and budget, and appoints the Director-General for a 5-year term. WHO comprises the WHA, the 34-member Executive Board, and the Secretariat. The Executive Board implements Assembly decisions, while the Secretariat executes these policies. The WHA is a unique multilateral forum where every country has a voice. Traditionally, influential countries like the US, Germany, and the UK shape resolutions, but nations like China, Brazil, India, Indonesia, and South Africa are increasingly influential. The WHA agenda covers a broad range of issues, from antimicrobial resistance to mental health and financing to intellectual property. Agenda discussions start weeks or months before the Assembly, with negotiations often continuing until the final days in informal, closed-door drafting groups.

Although decision-making can be slow, there is little desire to change the current system. The Executive Board (EB) of WHO meets each January and May to discuss policy matters and recommend draft decisions or resolutions for the next World Health Assembly (WHA). This process allows for thorough pre-WHA discussions and consensus-building. The EB also ensures the Secretariat appropriately responds to WHA decisions. The EB comprises technical experts from 34 member states, elected by the WHA for three-year terms. The EB also has emergency functions, used only twice for Ebola and COVID-19. WHA decisions, while not legally binding, carry political weight and set important precedents. Resolutions serve as agreed policy statements that can be used domestically and internationally. They reflect political consensus and are often cited in international relations and by various stakeholders. According to Gian Luca Burci, resolutions adopted by WHO's governing bodies are recommendatory but impactful, representing intergovernmental decisions. They provide Member States with flexibility, considering diverse national contexts and legal systems (interview Gian Luca Burci). Egle Granziera notes that accumulated decisions establish precedents shaping international law. Detailed resolutions lend credibility to WHO's technical policies and facilitate accountability through peer review and mutual learning (interview Egle Granziera). Non-state actors, including civil society organizations, philanthropies, and the pharmaceutical industry, seek to influence WHA resolutions to advance their health policy goals. Political disputes, such as those involving Palestine, Taiwan, Syria, Ethiopia, and Ukraine, also surface during WHO meetings, including the WHA.

5. RESOLUTIONS

Resolutions are formal expressions of the opinion or will of UN organs. A United Nations (UN) resolution is a formal text adopted by a UN body, primarily the Security Council or the General Assembly. These are known as United Nations Security Council resolutions and United Nations General Assembly resolutions, respectively. General Assembly resolutions and decisions hold the same legal status. They represent the views of Member States, offer policy recommendations, assign mandates to the UN Secretariat and subsidiary bodies, and address all budgetary matters of the UN. Except for decisions on payments to the regular and peacekeeping budgets, General Assembly resolutions and decisions are not binding on Member States. Implementing the policy recommendations in these resolutions and decisions is the responsibility of each Member State (The GA Handbook: A practical guide to the United Nations General Assembly, 2017, 2011). The structure of the UN resolutions follows a standard format with three parts: the heading, preambular clauses, and operative clauses. The entire resolution is written as one long sentence, punctuated with commas and semicolons, ending with a single period. The heading contains the name of the body issuing the resolution, which serves as the subject of the sentence; the preambular clauses indicating the framework through which the problem is viewed, as a preamble does in other documents; and the operative clauses in which the body delineates the course of action it will take through a logical progression of sequentially numbered operative clauses or recommends to be taken. Each operative clause calls for a specific action. Preambular and operative clauses usually start with verbs, sometimes modified by adverbs. The first word of each clause is either italicized or underlined. Preambular clauses are unnumbered, end with commas, and occasionally begin with adjectives. Operative clauses are numbered, end with semicolons, and never start with adjectives (The GA Handbook: A practical guide to the United Nations General Assembly, 2017, 2011). A WHA resolution is a formal agreement or decision by the member states of the WHO, used as an international policy instrument to make political commitments and request action from the member states and the WHO Director-General.

6. WHO HEALTH EMERGENCY AND DISASTER PREPAREDNESS

According to Pan American Health Organization (PAHO) the role of the WHO in emergencies is to ensure readiness to diminish public health risks in countries with high vulnerability and provide life-saving health services to affected populations in countries with ongoing emergencies. The field of health emergency and disaster preparedness refers to the knowledge and capacities to effectively anticipate, respond, and recover from the impacts of likely, imminent, or current hazardous events or conditions. Governments, response and recovery organizations, communities, and individuals can carry out preparedness actions to build the capacities needed to manage all types of emergencies and achieve an orderly transition from response to sustained recovery. These actions, based on a sound analysis of disaster risks and good linkages with early warning systems, include contingency planning, stockpiling of equipment and supplies, establishment and testing of coordination mechanisms, risk awareness raising and public information on protective behaviors, and associated training and field exercises. As the health cluster lead for global emergencies, WHO works with partners to mitigate, prepare, and respond to earthquakes worldwide. These include: strengthening the risk management system in health emergencies, limiting the risk of exposure to earthquakes by improving the quality of the built environment, with better control of land use, including regulating construction. This ensures that health facilities are resilient to hazards and can remain functional and able to respond to increased and changed health needs post-earthquake, with appropriately trained staff mobilizing medical intervention teams, including the establishment of temporary health structures and field hospitals, as well as emergency kits that invest in community preparedness, as residents are often the first responders.

7. REVIEW OF ARCHIVE DOCUMENTATION

Review of archive documentation includes an analysis of all legal instruments adopted on the different levels of UN and WHO on the topic of health emergency preparedness: the International Health Regulations (2005), the Sustainable Development Goals 2030, the Sendai Framework for Disaster Risk Reduction 2015–2030, and the Bangkok Principles on the implementation of the health aspects of the Sendai Framework, the Paris Agreement and the UN Framework Convention on Climate Change, the Addis Ababa Action Agenda on Financing for Development, the New Urban Agenda, and the WHO Global Programme of Work “13” with its strategic priority of one billion more people better protected from health emergencies. Also, the review included the WHA resolutions WHA65.20 on WHO’s response and role as health cluster lead, in meeting the growing demands of health in humanitarian emergencies, WHA68.15 on Strengthening emergency and essential surgical care and anesthesia as a component of universal health coverage, WHA73.8 on Strengthening preparedness for health emergencies: implementation of the International Health Regulations (2005), WHA74.7 on Strengthening WHO Preparedness for and response to health emergencies, WHA75.17 on Human Resources for Health, WHA76.2 on Integrated emergency, critical and operative care for universal health coverage and protection from health emergencies, and the 2023 report of the Director-General on Strengthening WHO preparedness for and response to health emergencies. The documents provided by WHE: Health Emergency and Disaster Risk Management Framework, Strategic Risk Assessment (STAR), WHO guidance for developing national Health Emergency Response Operations Plan (NHEROP) for all hazards, WHO Health-EDRM Research Network, Health System Resilience, were included in the review. The last group of documents reviewed in this process were the UN General Assembly resolutions 75/124 (2020) on International cooperation on humanitarian assistance in the field of natural disasters, from relief to development, and 77/28 (2022) on Strengthening of the coordination of emergency humanitarian assistance of the United Nations.

It was concluded that the last dedicated WHO resolution that specifically highlighted this priority area was Resolution WHA64.10 on Strengthening National Health Emergency and disaster management capacities and Resilience of health systems, which was adopted by the 64th World Health Assembly in 2011.

8. CROATIAN PROPOSAL OF THE NEW RESOLUTION

The previous activity of the Permanent Mission of the Republic of Croatia at the UN in Geneva came to the fore in the WHO during the chairmanship of the WHO coordination of European Union member states during the period of the COVID-19 pandemic (2020), and then in the role of Coordinator of the member states of the WHO EURO region during the beginning of the war in Ukraine 2021-2022. Croatia expressed great interest in strengthening the cooperation of member states regarding the preparedness and resilience of health systems during natural hazards, based on its experience in responding to the converging health threats of the COVID-19 pandemic and the earthquakes in Zagreb and Petrinja in 2020. Following the above based on active participation in the process of passing previous WHA resolutions Croatia entered into contact with the WHO Department for Emergencies, Preparedness, and Response and expressed its interest in collaborating with other MSs and encouraging the preparation of the new Resolution on strengthening health emergency preparedness for natural hazards for the WHA77 in 2024. Finally, Croatia proposed the Resolution "Strengthening Health Emergency Preparedness for Disasters Resulting from Natural Hazards", which was adopted at the 77th World Health Assembly in May 2024. The Croatian proposal for the aforementioned resolution is a new step forward in the health diplomacy of the Republic of Croatia and, in addition to our partner countries on this occasion, Fiji and Mozambique, twenty other countries have joined the Core Group (CG) of co-sponsors of the above-mentioned document since the beginning, including Australia, Bangladesh, Costa Rica, France, Germany, India, Italy, Ireland, Monaco, Nepal, Pakistan, Peru, Samoa, Slovakia, Slovenia, Tanzania, Türkiye, United States of America (as CG members) and Austria, Belgium, Brazil, Botswana, Bulgaria, Chile, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, Georgia, Greece, Hungary, Latvia, Lithuania, Luxembourg, Maldives, Malta, Marshall Islands, Netherlands, Peru, Poland, Portugal, Romania, Spain, Sweden, United Kingdom and Zambia (as co-sponsors), and the resolution was given special value. In light of the escalating frequency and intensity of disasters resulting from natural hazards, a proposed resolution for the Seventy-seventh World Health Assembly (WHA) is dedicated to raising awareness of the importance of being prepared for an immediate response in natural disasters that can hit us in parallel.

9. PROCESS OF PROPOSING THE RESOLUTION

According to the planned timeline Croatia separated the process of producing the resolution in 3 phases.

9.1. Phase I, September 2022 – March 2023.

After the finalization of the EURO coordination role in September 2022. The health team of the Permanent Mission of the Republic of Croatia started the new project of the proposal of the new Resolution focused on health emergency preparedness during natural disasters for the 77th WHO Assembly in 2024. Upon the confirmation of the support of the Ministry of Health of the Republic of Croatia for this process, Croatia started in November 2022. to inform different MSs and WHO departments in WHO HQ in Geneva of its intention, recognize their huge interest in the mentioned topic, and count on it as the base for a new resolution. Among others, present leaders in providing the information on global health emergency preparedness during the natural disasters at that moment Japan and USA could not follow the Croatian idea, as the

consequences of their strong involvement in the processes of producing the new INB pandemic instrument and IHR reform.

9.2. Phase II, March - September 2023

Guided by the idea that apart from the big players in the global WHO Arena, Croatia continued the process of drafting a new resolution counting on the support in the process of proposing the new resolution on health emergency preparedness during natural disasters from the MSs with similar national experience with natural disasters, equal empathy for the needs of strengthening the national health systems' capacities for preparedness, and strong interest to provide the new document at the level of WHA to improve the global health emergency preparedness during the natural disasters. In March 2023, the idea to establish a well-recognized mini draft group of co-proposers from different WHO regions came to realization when Croatia invited Fiji from the WHO Western Pacific region and Mozambique from the WHO African region as possible future partners and confirmed their interest for cooperation on the bilateral ministerial level on the side of 76th World Health Assembly in May 2023. During the first phase, Croatia established a closed contact at the bilateral level and received support for its activity on the resolution from Dr. Tedros Adhenom Ghebresyus, Director General, WHO, and Dr. Mike Ryan, Executive Director, WHO, Department of the Emergencies (WHE). Also, Croatia with WHE's help introduced its idea to the directors of emergencies of all six WHO regions, the Governing Bodies Department, and several other departments in WHO HQ that are in the relationship through different activities and interests with the topic of the proposed resolution. The process of creating the proposal of the new resolution included the wide review of Archive documentation that includes an analysis of all legal instruments adopted on the different levels of the UN and WHO on the topic of health emergency preparedness. Parallel with the process of producing the zero draft of the document led by Croatia, three co-proposers started their diplomatic outreach activities in the direction of the capacity building of the draft group, seeking for partnerships with several MSs from different WHO regions, with similar experience and empathy for the mentioned topic of resolution and capacity to actively participate in the complex process, especially for EB members. After the bilateral meetings and approvals from their capitals, the newly established Core Group for the resolution gradually grew to 20 members and at the first common meeting Croatia, Fiji, and Mozambique (as co-proposers) proposed the skeleton of the future resolution, and Australia (EB), Bangladesh, Costa Rica, France (EB), Germany, India (EB), Italy, Ireland, Monaco, Nepal, Pakistan, Peru, Samoa, Slovakia (EB), Slovenia (EB), Tanzania, Türkiye, United States of America (EB) (as co-sponsors) accepted the content of this document as the key components of the new resolution. In the further steps of consultations Austria, Belgium, Brazil, Botswana, Bulgaria, Chile, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, Georgia, Greece, Hungary, Latvia, Lithuania, Luxembourg, Maldives, Malta, Marshall Islands, Netherlands, Peru, Poland, Portugal, Romania, Spain, Sweden, United Kingdom and Zambia joined to co-sponsors' group of MSs. Upon three rounds of consultations from June to September 2023, the Core Group MSs agreed that a new resolution will be tabled with the title the Resolution WHA77 Strengthening Health Emergency Preparedness for Natural Hazards Related to Disasters and the zero draft of the proposal was finalized for the official start of the negotiations with all MSs of WHO in October. During the preparation of the document, CG MSs agreed that the content of the resolution should be more practical and less theoretical, and following the title it should not include contents related to consequences of human-made disasters, conflicts, migrants, PABS (Pathogen Access and Benefit Sharing System) and other issues those could politicize the process of consultations, jeopardize the finalization and adoption of the resolution, especially in the present moment of geopolitical tensions and global polarization.

Also, CG MSs in collaboration with WHO analyzed and delivered the prediction of the financial costs of the resolution and the final result is that the total budgeted resource levels required to implement the decision is 45.68 million US\$.

9.3. Phase III, September 2023.- May 2024.

The start of the informal consultation of all MSs of WHO was optimistic. During the six slots of informal MSs showed a huge interest in the content of the resolution, and by adding and correcting the text of the document they improved the content of the resolution to the highest quality with mentioned many details important for practical implementation of the activities at the level of MSs and DG. Also, Croatia made a step forward and established an intergovernmental Working group at the national level to support the drafting of the mentioned resolution, which consists of representatives of the Ministry of Health, the Ministry of Defense, the Ministry of the Interior, Civil Protection, the Red Cross, the Croatian Institute for Public Health and non-governmental associations. and with its continuous suggestions and advice gave a significant boost in the drafting of the Resolution. After the discussion process, all member states reached a consensus on almost the entire text of the document, except for the open question of gender equality terminology. Mentioning the imperative to respect a gender-responsive approach during a health emergency, CG members experienced criticism of this gender wording. Various influences push some Member States not to accept the term responsive, which means that in addition to recognizing different genders in health emergency preparedness, we must respond following the different needs of different genders, and not only recognize their diversity. Gender equality seems to have become the new symbol of present geopolitical tensions and global polarization. In January 2024, in order to avoid a possible negative vote on the draft resolution proposal at the EB, the CG MSs decided to reach a consensus of all WHO MSs on the resolution by leaving the wording gender-responsive/sensitive in the text. This is the reason for the hard-won consensus of all member states that finally led to the final adoption of the resolution at the 77th World Health Assembly in May 2024 which includes the gender-responsive terminology.

10. THE CONTENT OF THE RESOLUTION

10.1. Preambular Paragraphs

The preambular paragraphs establish the context and rationale for the resolution, highlighting the importance of existing international frameworks, the impact of climate-related disasters, the role of national governments and international cooperation, and the disproportionate effects on vulnerable groups. The text of the first three paragraphs provides a standard recollection of the relevant global frameworks on this issue, which shapes and sets the foundation for the resolution, recalls various initiatives that are consistent with the current theme of this resolution, and addresses many of the issues that are raised in the current resolution, with the current being focused on disasters resulting from natural hazards. The resolution inter alia confirms the central and unique role of the United Nations in providing leadership and coordinating the efforts of the international community to support countries affected by humanitarian emergencies in full respect of the guiding principles for the strengthening of the coordination of emergency humanitarian assistance of the UN system. Further, in paragraphs, the resolution addresses the concern of the rising threats resulting from climate-related disasters and at the same time addresses the need to focus on adaptation, risk reduction, and preparedness, and attempts to flesh this idea out more, with an open listing of natural hazards in the WHO classification of hazards in its Emergency and Disaster Risk Management Framework. Also, the resolution addresses COVID and how it has brought to light the weakness of our health systems in terms of preparedness, which overall and coupled with the ongoing impacts of natural hazards has exacerbated the challenges faced by health systems globally.

The resolution emphasizes that governments are responsible for their health systems' preparation and response, addresses the role of communities and civil society and a need for international cooperation and global effort, and recognizes the multi-dimensional aspects of disasters in terms of economic, environmental and social on the society as a whole, that requires a whole-of-society approach to prevention, preparedness, response, and recovery. In a non-exhaustive way, the short and long-term impacts of disasters it speak on the importance of the health workforce and recognize the potential of disruptive technologies, especially during emergencies, referencing to the WHO Global Strategy on Digital Health 2020-2030.

The last paragraphs are dedicated to vulnerable groups and highlight the fact that they are under-represented in emergency preparedness decision-making, recognizing that disaster preparedness and response is only effective when it's anchored in the experiences of those most vulnerable and disproportionately affected.

10.2. Operative Paragraphs

The first section of the operative paragraphs urges member states, taking into account their national contexts and priorities, to provide activities of:

- 1) **Risk Assessment and Resilience Building:** This paragraph urges Member States to strengthen emergency preparedness based on systematic risk assessments, risk reduction, and mitigation strategies. It emphasizes the advancement of Universal Health Coverage (UHC) and primary health care while catering to the needs of marginalized and vulnerable populations. The continued provision of essential health services during natural disasters is highlighted as a critical objective.
- 2) **Financial Commitment and Capacity Building:** Member States are urged to sustain political commitment and allocate adequate financial resources for comprehensive and sustainable national and subnational capacities for health emergency preparedness and health security. This includes planning, coordination, healthcare worker support, information management, resilient health infrastructure, logistics, and community capacities.
- 3) **Operational Response Coordination:** This paragraph emphasizes the need for risk-informed operational response coordination at various levels (subnational, national, regional, and global). Timely and effective relief and healthcare for affected populations, adhering to technical standards and best practices, are crucial. Regularly evaluated and updated gender- and age-responsive national multi-hazard health sector emergency response plans are emphasized.
- 4) **Engagement in Prevention and Preparedness:** Member States are encouraged to engage at different levels to advance prevention, preparedness, response, and recovery of health systems from disasters resulting from natural hazards. Collaboration with various stakeholders, including communities, is vital in these efforts.
- 5) **Safety and Resilience of Health Facilities:** This paragraph requests Member States to prioritize investments in improving the safety and resilience of health facilities. Safe and proper location, quality construction, and continued functioning during and after emergencies are essential to minimize disruptions to essential health services and protect lives.
- 6) **Whole-of-Government and Whole-of-Society Coordination:** The resolution calls for coordinated action across the government and society, including all populations, WHO, and the international community. Multisectoral coordination mechanisms based on participatory, community-centered, and gender- and age-responsive approaches are emphasized.
- 7) **Comprehensive Essential Health Services:** This paragraph requests Member States to ensure timely access to a comprehensive package of prioritized essential health services during and after natural disasters. Adequate surgical services, rehabilitation, sexual and

reproductive health, and gender-based violence services are to be included through initiatives like the WHO Emergency Medical Teams.

- 8) Regular Risk Assessments and Leadership: Member States are urged to conduct systematic risk assessments, engage all key stakeholders, and establish defined leadership to prepare for health emergencies and disasters resulting from natural hazards.
- 9) Support for the Health and Care Workforce: This paragraph focuses on supporting the health and care workforce, including frontline and community health workers, by updating and enhancing their technical skills for prevention, victim rescue, and addressing health issues during and after natural disasters.
- 10) Strengthening Data Collection and Research: Member States are encouraged to support the strengthening of data collection, including disaggregated data, and research for continuous improvement of evidence-based health emergency preparedness and response.

The second section of the operative paragraphs requests the Director-General to provide technical guidance and support to Member States in implementing the resolution's objectives. This includes the development of technical guidance and supporting tools to strengthen health emergency preparedness for disasters resulting from natural hazards, the support in addressing context-specific approaches for vulnerable settings, to mobilization of adequate financial and human resources, and ensure enhanced capacity of WHO at all levels of WHO. It also requests a report to the Seventy-ninth WHA on progress made, lessons learned, and best practices in implementing this resolution.

11. CONCLUSION

By proposing this resolution, Core Group members led by Croatia aim to strengthen health emergency preparedness for disasters resulting from natural hazards. It is of historical importance for Croatia that it was the proposer of the WHA resolution. There is no time like the present to take urgent action in strengthening our health emergency preparedness for disasters resulting from natural hazards. Natural hazards, exacerbated by climate change, continue to pose significant threats to global health and well-being. The COVID-19 pandemic and the recent devastation caused by disasters related to natural hazards show us the undeniable escalation in frequency and intensity and its harm to human life. It is against this backdrop and through a global shared vision and priority to plan and prepare for the impacts of disease outbreaks in combination with disasters resulting from natural hazards, that the resolution Strengthening Health Emergency Preparedness for Disasters Resulting from Natural Hazards was adopted at the Seventy-seventh WHA. The resolution seeks to renew commitments, advance the high-level strategic dialogue, and maintain political and financial commitment and support for this priority area. It aims to enhance risk reduction, mitigation, and health system resilience, with a focus on marginalized and vulnerable populations. It also emphasizes coordination, capacity building, and the provision of essential health services during and after emergencies. The resolution requests WHO to develop technical guidance and supporting tools to strengthen emergency preparedness for disasters resulting from natural hazards, whilst addressing context-specific approaches for vulnerable settings. The aim is to strengthen health emergency preparedness for disasters resulting from natural hazards. The resolution recognizes the interconnectedness of health and disaster risk reduction and emphasizes the role of all stakeholders in safeguarding the health and well-being of communities worldwide. It has been over a decade since, yet the strengthening of our health systems' preparedness for disasters resulting from natural hazards continues to fall behind. Therefore, the proposed resolution builds upon international commitments and existing resolutions and initiatives, recognizing the multi-dimensional aspects of disasters and the importance of whole-of-society engagement.

This resolution seeks, through coordinated efforts, political commitment, and evidence-based approaches, to improve the resilience of health systems and protect at-risk populations during periods of crisis.

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CONSUMER PERSONAL CHARACTERISTICS AS PREDICTORS OF INTERNET BANKING ADOPTION

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ABSTRACT

The development of the Internet and the advent of modern technology have led to the digitalization of all aspects of human life, including the financial sector. Banks have recognized the advantages of the Internet and new technologies, incorporating them into their operations. Internet banking allows users to access traditional services anytime and anywhere, eliminating the need to visit a bank branch. This convenience is the primary advantage for users of online banking services. However, concerns about personal data security and fears of identity theft deter some individuals from utilizing these services, despite their numerous benefits. This study aims to identify the personal characteristics that influence the level of Internet banking usage among consumers in Croatia, including the impact of financial literacy. Financial literacy is crucial in today's digital age, where increasingly complex financial products require a certain level of financial knowledge for safe usage. Understanding these products and selecting the most appropriate ones to meet individual needs is essential for good personal finance management and an individual's overall financial well-being. The research employs a survey analysis on a sample of 260 participants, using a descriptive and correlation analysis to explore the responses. The results indicate that demographic characteristics age, education level and employment status significantly influence the use and frequency of Internet banking. In contrast, gender do not have a significant impact. Additionally, a higher level of financial literacy positively affects the frequency of Internet banking usage.

Keywords: *Internet banking adoption, personal characteristics, survey analysis*

1. INTRODUCTION

At the end of the 20th century and the beginning of the 21st, the world experienced significant digitalization alongside rapid technological advancements and the rise of the Internet. The banking industry, like many others, recognized the advantages of the Internet and integrated it into their business practices, leading to the development of fintech products and the emergence of electronic banking. The term "fintech" describes the integration of modern, Internet-oriented technologies with traditional financial products and services offered by financial intermediaries. In the broadest sense, fintech represents the digital transformation of the entire financial sector (HUB analysis, 2019) and is a product of digital financial innovation (Ozili, 2020). According to Ozili (2018), three elements are essential for the establishment of fintech: a platform (transaction technology), an agent (bank or other financial institution), and an intermediary (Internet, mobile device, personal computer). Among various fintech innovations, electronic banking (e-banking) stands out as a significant development (OECD, 2018).

According to the number of Internet users for banking services, Croatia, with 61.88% of Internet banking users recorded, is still below the European Union average (Eurostat, 2023). Despite the growing interest in Internet use, financial institutions need to increase educational awareness regarding Internet banking facilities and services to encourage more depositors to adopt these technologies. The success of technological innovation relies on its actual usage, making it crucial to understand the factors that influence its adoption. Therefore, identifying what affects the adoption of Internet banking is necessary. The empirical research is based on a survey analysis with questions focusing on the individual characteristics and financial literacy levels of each participant. According to the literature review, there is limited research on the use of Internet banking in Croatia. Therefore, this study addresses a notable gap in the literature. In addition to examining the demographic traits of users and comparing these with findings from studies in other countries, this research also explores the relationship between respondents' financial literacy and their use of Internet banking services. Following the introduction, the next section presents the theoretical framework and literature review. The third section outlines the data and methodology, while the fourth section discusses the results. The final section presents the research limitations and concluding remarks.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Electronic banking, or e-banking, refers to the provision of traditional banking services through electronic means (Chauhan et al., 2022). E-banking encompasses ATMs, Internet banking, and mobile banking. Internet banking allows users to conduct banking transactions directly from their computers through bank websites, while mobile banking involves performing banking services using a mobile application on smartphones or tablets (Martins et al., 2014). Internet banking represents a new method of delivering bank products and services using the Internet as a distribution channel (Frust et al., 2002). It allows clients to access banking services 24/7 through the bank's website (Nazaritehrani and Mashali, 2020), provided they have a computer or mobile device connected to the Internet (Kovačević and Đurović, 2014). This means clients can access services at any time and from any location with an Internet connection, free from the constraints of bank branch hours (HNB, 2019). Today, Internet banking is a fundamental component of a bank's business portfolio (Guraau, 2002). Banks provide various products and services via the Internet, including traditional services such as opening accounts, transferring funds, checking balances and savings (Frust et al., 2002), and, as well as new services like online bill payments, online shopping and investing (Nazaritehrani and Mashali, 2020). Through Internet banking, customers can receive transaction statements, enabling them to monitor their earnings and spending. The integration of the Internet and technology into banking operations has transformed banking philosophy, leading to modern banking practices that differ significantly from traditional methods (Rončević, 2006). Traditionally, banks expanded their market share by opening numerous branches and offering homogeneous products, incurring substantial fixed and variable costs. This approach emphasized cost minimization and sales maximization, with banks dictating terms rather than focusing on client needs. The Croatian banking sector, characterized by an oligopolistic market structure, is dominated by a few large players (Rončević, 2006). Modern banking, however, prioritizes client needs. Banks now market products and services tailored to their clients' preferences. Clients, with easy access to information, can quickly identify which bank meets their needs best. As a result, banks must offer a wide range of products and services, developed in consultation with clients. By using the Internet as a distribution channel, banks achieve economies of scale, providing services to a large number of clients at lower costs. This also allows smaller banks to compete with larger ones. In modern banking, market research is key, and income generation is more oriented toward commission income than interest (Rončević, 2006).

The key challenge for banks has shifted from finding clients to being found by clients (Mirković and Lukić, 2015). The advantages of Internet banking for customers include unrestricted access to banking services, the ability to perform transactions at any time and place, lower costs, and faster transactions, all of which enhance customer satisfaction through time savings (Milanović Glavan and Ćibarić, 2015). However, from the client's perspective, the main disadvantages are security concerns due to potential hacker attacks and data misuse (Milanović Glavan and Ćibarić, 2015). These security concerns are the primary reason some individuals are hesitant to adopt Internet banking (Saeidipour et al., 2013). Some of the previous studies have treated banking internet services as technological innovations and analyzed their adoption using various theories, such as the technology acceptance model (TAM) (for the review see i.e. Baca et al., 2022). Our research builds on another strand of literature and empirical studies that have been conducted to identify the factors affecting the adoption of online banking in diverse country contexts. The most widely examined factors that impact online banking adoption in the previous literature are the demographic characteristics of the users. Although empirical findings and research methodologies vary from country to country, these studies show that customers' demographic characteristics are essential for understanding the acceptance and adoption of Internet banking (Jenkins et al., 2022). According to previous research, there is a clear connection between certain demographic characteristics and the use of Internet banking services. Numerous authors (i.e. Serener, 2016; Aydogan and Van Hove, 2017; Jimenez and Diaz, 2019; Omayoto, 2020; Yates, 2020; Abdou, 2023) generally agree that age, gender, level of education, and employment status influence the use and perception of Internet banking. Specifically, education and income levels are positively correlated with the likelihood and frequency of using Internet banking, while age is negatively correlated, and results regarding gender are inconclusive. Furthermore, the likelihood of conducting banking transactions online increases with one's level of digital literacy. Individuals who frequently use the Internet and have prior experience with computers are more likely to adopt Internet banking (Mutengezanwa and Mauchi, 2013; Munari and Susanti, 2021). Serener (2016) found that people under the age of 25 are more likely to use Internet banking compared to those over 56. Yates (2020) also noted that the likelihood of using Internet banking decreases with age. Younger generations, who grow up with technology, adapt more quickly to technological changes (Pinter et al., 2021), whereas older individuals tend to be more resistant and slower to adopt new technologies (Giordani et al., 2014). This is supported by data from the Croatian National Statistical Bureau (DZS, 2022), which shows that 99% of people under 44 in Croatia use the Internet daily, compared to 42% of those over 65 (DZS, 2022). Elderly population is less likely to use Internet banking because of the a lack of trust in security, a high perceived risk, and an unwillingness to share personal and financial information online (Kim et al., 2005; Abdou, 2023) as well as they prefer interaction with bank officials. They also find banking websites complex and confusing, which further deters them from using these services. Additionally, many elderly individuals are not well informed about the available services and benefits of Internet banking (Kim et al., 2005; Omayoto, 2020). Nevertheless, Omayoto (2020) found that many elderly individuals who do not currently use Internet banking intend to adopt it in the future, driven by a desire to keep up with technological advancements. Gender is another characteristic that influences the use of Internet banking (Kim et al., 2005; Mutengezanwa and Mauchi, 2013; Serener, 2016; Jimenez and Diaz, 2019; Yates, 2020; Abdou, 2023). Research indicates that men are more frequent users of Internet banking than women. Men often view technology as a status symbol, leading to more frequent use compared to women (Mutengezanwa and Mauchi, 2013). In contrast, women often express insecurity about conducting transactions online and are generally slower to adopt new technologies (Chen et al., 2021). Historical factors such as wage differences, lower education levels, and traditional family roles have also contributed to this disparity.

However, these differences are gradually diminishing due to increasing educational attainment and gender equality (Jimenez and Diaz, 2019). Education level significantly impacts the use of Internet banking (Matilla, 2003; Kim et al., 2005; Goldfarb and Prince, 2008; Serener, 2016; Jimenez and Diaz, 2019). Higher education levels correlate with faster adoption of innovations, including Internet banking, because educated individuals possess the skills and knowledge necessary to recognize its advantages, such as time savings (Kim et al., 2005; Jimenez and Diaz, 2019). Serener (2016) found that in Greece, higher education levels increase the probability of using Internet banking. Goldfarb and Prince (2008) noted that while individuals with higher education levels adopt the Internet more quickly, they tend to spend less time online compared to those with lower education levels. Jimenez and Diaz (2019) confirmed a positive correlation between education level and Internet banking use, identifying the typical Internet banking user in Spain as a younger man with a higher education level. Employment status also affects the acceptance of Internet banking. Employed and self-employed individuals are more likely to use Internet banking services comparing to the unemployed or students (Polasik and Wisniewski, 2008; Mutengezanwa and Mauchi, 2013; Aydogan and Van Hove, 2017; Jimenez and Diaz, 2019). Aydogan and Van Hove (2017) suggests that employed individuals perform more financial transactions and have less free time, making them more inclined to use Internet banking for efficiency. Financial literacy is multidimensional concept that includes knowledge, attitudes, and behaviors related to finance (OECD, 2005). According to the OECD's (2013) commonly cited definitions, financial literacy is a process in which consumers/investors enhance their understanding of financial products and concepts. This definition reflects the comprehensive understanding of financial literacy as a combination of knowledge, attitudes, and appropriate behavior, enabling individuals to navigate changing environments and achieve personal benefits in developing circumstances. Since financial literacy equips individuals with the skills to make better financial decisions, it is reasonable to expect that financial literacy may also affect the selection of suitable banking products, and identify new, profitable financial services such as internet banking (Yoshino et al., 2020; Yates, 2020; Andreou and Anyfantaki, 2020; Munari and Susanti, 2021). Yoshino et al. (2020) found that financial literacy positively impacts the use of fintech products in Japan, while Yates (2020) concluded that individuals with higher financial literacy are more willing to adopt Internet banking. Research by Andreou and Anyfantaki (2020) examined the influence of financial literacy on Internet banking usage among the population of Cyprus. Their findings revealed that financially literate individuals used Internet banking more frequently and displayed greater confidence in performing online financial transactions compared to those with lower financial literacy. Munari and Susanti (2021) explored the impact of financial and digital literacy on e-banking usage among students in Indonesia. Their study demonstrated that both digital and financial literacy significantly influence the adoption of e-banking services. Nguyen (2022) discovered that while objective financial knowledge does not affect the use of fintech products (such as online bill payment, fund transfer, and savings) in Vietnam, subjective financial knowledge does. In other words, confidence in one's financial knowledge encourages the use of these products, suggesting that fintech solutions are simple enough to be utilized without extensive financial expertise.

3. DATA AND METHODOLOGY

Primary data was collected by conducting an anonymous online survey in June 2023. The survey questionnaire was created in the "Google docs" tool and was adapted according to the model of the questionnaire from the article by Andreou and Anyfantaki (2020). Invitations to participate in the survey were distributed in various open and closed online groups (Facebook, Instagram, WhatsApp groups, etc.) and 260 responses were collected. The questionnaire has three parts.

The first part consists of questions related to basic demographic characteristics; gender, age, level of education, and status in the labor market through questions structured in the form of multiple choices. The second part of the survey refers to a set of questions that measure the level of financial literacy of respondents. To measure the level of financial literacy of respondents, a set of "Big 5" questions, designed by authors Lusardi and Mitchell (2011), are used to measure knowledge of 5 economic terms, namely inflation, interest rate, housing loan, interest rate impact on bond prices, and risk diversification. The third part of the survey refers to the use of Internet banking. The respondents were asked if they had an account in the bank, which banks they had an account in, and how often they visited the bank branches. They were also asked how long their relationship with their primary bank had been and whether they had considered changing their primary bank. They were then asked whether they were users of Internet banking and, if so, to determine how often they used Internet banking services. In the end, all respondents who declared themselves as non-users of Internet banking had to determine on a Likert scale from "Completely disagree" to "Completely agree" how much they agree with the statements that describe the reasons for not using Internet banking services. Data analysis was performed using SPSS software package, and using nonparametric tests (Spearman's rank correlation test, Mann Whitney and Kruskal Wallis test) due to nature of scales used in data collection.

4. RESULTS OF THE RESEARCH

Research results show a predominately female population in the sample (80% of 260 participants). Regarding the age, 20% of the respondents are aged 18-26 (i.e. 52 people), 34.2% of the respondents (i.e. 89 of them) are aged 27-42, 25% of the respondents are between 43 and 58 years (65 respondents) and 20.8% of respondents are older than 59 years. The largest number of respondents have a high level of education (graduated from high school or college - other), 36.2% of them. Furthermore, 34.2% of them have completed high school, and 29.2% of them have obtained a high level of education in economic sciences. Regarding working status of the respondents, 7.3% of respondents were unemployed, 6.5% were self-employed, 14.2% were students, 14.6% were retired, 15% were employed in the financial/economic sector and 42.3% were employed in other sectors. It is evident from the above that employed persons dominate in the sample. After examining the demographic characteristics, the respondents' financial literacy was assessed using the "Big 5" questions. The results indicate that the respondents possess above-average basic financial knowledge, particularly regarding inflation and interest rates, with over 70% answering these questions correctly. However, their understanding of housing loans was slightly weaker. For the more advanced financial literacy questions, which pertain to knowledge of financial markets, the findings were mixed. Less than half of the respondents correctly answered the question about risk diversification. The respondents showed the poorest performance on the question about bond price changes. Comparing Internet banking users with non-users revealed some notable differences. Internet banking users demonstrated superior knowledge on three out of the five financial literacy questions, specifically those concerning interest rates, housing loans, and risk diversification. In contrast, non-users outperformed users only on the question related to bond price changes. When it came to the question about inflation, both groups had an equal distribution of correct answers. To examine the connection between financial literacy and the use of Internet banking, a Spearman's rank correlation test was conducted between the indices of total, basic, and advanced financial literacy and the variable "Do you use Internet banking?". The results showed no statistically significant difference, indicating no significant correlation between the level of financial literacy and the use of Internet banking. In the next step, the analysis focused on the relationship between the index of financial literacy and the frequency of Internet banking use.

The results revealed a statistically significant relationship between the index of basic financial literacy ($\alpha^* = 2.2\% < 5\%$), the index of total financial literacy ($\alpha^* = 0.6\% < 5\%$), and the frequency of using Internet banking. The Spearman coefficient for the index of basic financial literacy was 0.142, indicating a positive correlation between the level of basic financial literacy and the frequency of Internet banking use. Specifically, 76.4% of individuals with high basic financial knowledge use Internet banking very often or frequently, compared to 69.2% of individuals with very low basic financial knowledge. Additionally, 15.4% of individuals with no correct answers do not use Internet banking, compared to 11.8% of those with all correct answers. The Spearman correlation coefficient, between the overall financial literacy index and the frequency of Internet banking use, is statistically significant with value of 0.169, suggesting a positive but weak correlation between overall financial literacy index and the frequency of Internet banking use. Analyzing the mean values of the frequency of Internet banking use in relation to the overall financial literacy index showed that at lower levels of overall financial literacy, the frequency of use decreases, while at medium and high levels, the frequency of Internet banking use increases. To investigate whether demographic characteristics influence the use of Internet banking, the Mann-Whitney U test was applied for gender differences, and the Kruskal-Wallis test was used for variables of age, education level, and employment status. The findings are as follows: *Gender*: The Mann-Whitney U test revealed no statistically significant difference in Internet banking usage (Mann-Whitney sig.= 0.61; U=5252; Z=-.510) or frequency of internet banking usage (Mann-Whitney sig.= 0.973; U=5394,5; Z=-.034) between male and female respondents groups. *Age*: The Kruskal-Wallis test results (Kruskal Wallis sig.= 0.000; $\chi^2=33.326$; df=3) indicated a statistically significant difference in Internet banking usage according to age. The likelihood of not using Internet banking increases with age. Only 3.8% of those aged under 26 do not use these services, compared to 33.3% of those over 59. Additionally, the frequency of Internet banking usage also significantly differs according to the age cohorts of respondents (Kruskal Wallis sig.= 0.003; $\chi^2=14.039$; df=3). *Education Level*: The Kruskal-Wallis test results (Kruskal Wallis sig.= 0.072; $\chi^2=6.995$; df=3) showed a statistically significant difference in Internet banking usage concerning education level (significance level of 10%). However, no significant difference was found in Internet banking usage regarding the field of education (economics vs. other fields) (Mann-Whitney sig.= 0.564; U=3463; Z=-.577) nor in the frequency of Internet banking use based on field of education. *Employment Status*: The Kruskal-Wallis test (Kruskal Wallis sig.= 0.000; $\chi^2=43.995$; df=5) indicated a statistically significant difference in Internet banking usage according to employment status. The highest usage rates were observed among the self-employed (82.4% use Internet banking often or very often), those employed in other sectors (80%), and those employed in economic sectors (79.5%). In contrast, 36.8% of the unemployed and 42.1% of pensioners do not use these services. In summary, internet banking usage shows a significant difference according to characteristics of age, education level, and employment status, but not gender.

5. CONCLUSION

With the rapid advancement of information and communication technology, Internet banking has emerged as an important mean, offering numerous advantages for both users and financial institutions. Despite these benefits, Croatia's adoption rate of Internet banking remains below the European Union average. Thus, this paper aims to fill the observer research gap by investigating the consumers' personal characteristics that influence the adoption of Internet banking in Croatia. Additionally, the research examines the financial literacy of users and its impact on the utilization of these digital services. The results of the research showed that internet banking services use is influenced by age, education level, and employment status, but not by gender.

These results are in accordance with the results of previous findings, such as Jenkins et al. (2022) and Abdou (2023). The results on the impact of financial literacy on Internet banking adoption indicate a positive effect, which is in accordance with the conclusions of i.e. Yoshino et al. (2020), Yates (2020) and Andreou and Anyfantaki (2020). Although the sample size (N=260) was substantial, the sampling procedure employed – i.e., convenience sampling, limits the representativeness of the sample and ability to generalize results. Furthermore, as indicated when describing the sample characteristics and regarding the sample structure in terms of socio-demographic characteristics, there is a notable over-representation of females. Despite these limitations, the results offer valuable insights and serve as a solid foundation for future research on the variables analyzed in this paper. This is especially relevant for a more detailed investigation of the impact of financial literacy on the use or non-use of Internet banking services. Financial literacy is an essential skill for better personal finance management and overall well-being, in an era characterized by rapid changes and a proliferation of diverse and innovative financial products. Enhancing financial literacy can help reduce fear and negative attitudes toward digital products, thereby encouraging their acceptance and use in everyday life.

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SOCIAL ASSISTANCE SYSTEM SETTINGS TO SUPPORT FLOOD VICTIMS IN BULGARIA

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ABSTRACT

In recent decades, crisis events of a hydro-meteorological (floods, droughts, extreme heat, forest fires, storms, etc.) and geophysical (earthquakes, landslides, etc.) nature have accounted for nearly ninety per cent of all major disasters, outlining an alarming risk profile for the Republic of Bulgaria. The anxiety is heightened by the fact that all scientific expert assessments predict that climate change will increase the frequency and intensity of weather-related hazards in the country, which will inevitably increase the severity and risk of events of this nature. Inevitably, the latter will have an impact on the economic and social condition and development of the members of Bulgarian society, with a transformative cascading effect on poverty, infrastructure systems of settlements, the spread of infectious and contagious diseases, population migration, conflicts between citizens and food crises. One of the first public responses specifically targeting those affected by a catastrophic risk has been delegated under Bulgarian law to the social assistance system. The Social Assistance Agency should institutionally assist the affected citizens, ensuring timely coverage of their accidental needs, the occurrence of which is conditioned by an unforeseen confluence of circumstances leading to significant deviations from their usual way of life. In this regard, this paper aims to present and evaluate the response of the Bulgarian social assistance system to the catastrophic event – flooding.

Keywords: *flood, climate change, natural disasters, social safety nets, social assistance, social benefits, Social Assistance Agency, Social Protection Fund*

1. INTRODUCTION

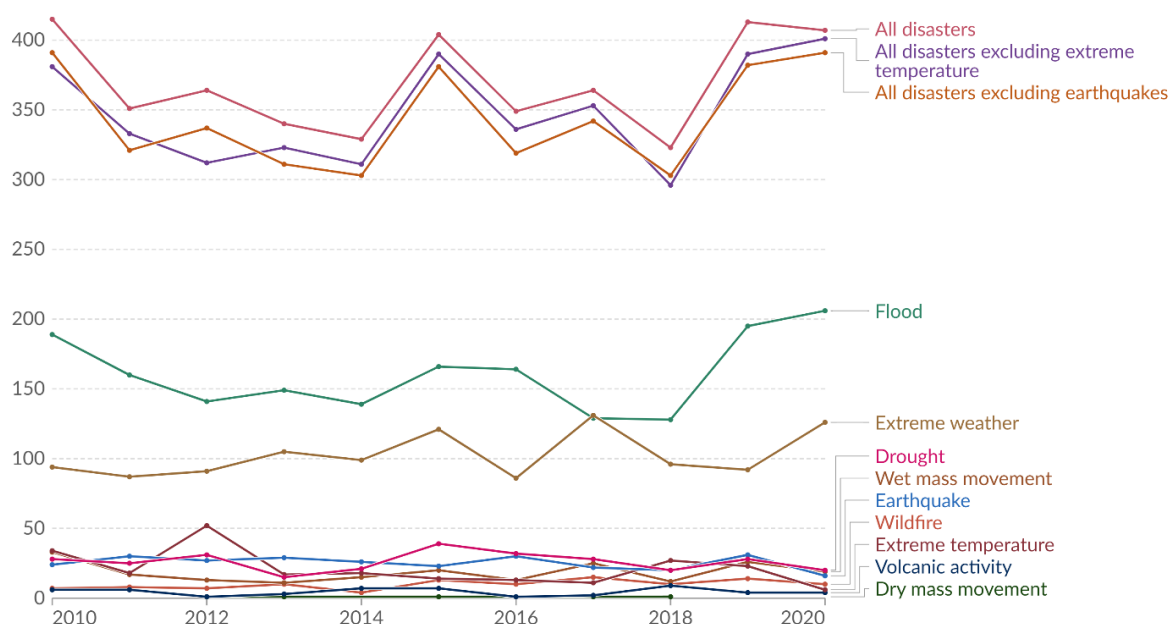
The global climate changes that we have seen in recent decades have resulted in an increase in recorded cases of natural disasters affecting even geographical areas, some of which have not recorded similar events in the past. Globally, according to EM-DAT, CRED (1) In the period 2010-2020, the leading position among all registered natural disasters is occupied by floods (Figure 1).

Figure following on the next page

Number of recorded natural disaster events, 2010 to 2020

Our World
in Data

The number of global reported natural disaster events in any given year. Note that this largely reflects increases in data reporting, and should not be used to assess the total number of events.



Data source: EM-DAT, CRED / UCLouvain (2024)

Note: Data includes disasters recorded up to April 2024.

OurWorldInData.org/natural-disasters | CC BY

Figure 1: Number of recorded natural disaster events, 2010 to 2020

(Source: EM-DAT, CRED / UCLouvain (2024) – with major processing by Our World in Data. "Number of recorded natural disaster events – EM-DAT" [dataset]. EM-DAT, CRED / UCLouvain, "Natural disasters" [original data]. Retrieved April 30, 2024, from (1)

Flooding is used as a general term for the overflow of water from a river channel onto normally dry land in the floodplain (riverine flooding), higher than normal levels along the coast (coastal flooding), and in lakes or reservoirs, as well as the accumulation of water at or near the point of rainfall (flash flooding) (2). Floods are the most common natural disasters and the most frequent disaster on a regional scale, and they can cause widespread destruction resulting in loss of life and/or damage to personal property and public infrastructure. According to (3), Floods can be classified into three broad categories: (1) pluvial floods, which are caused by rapid and excessive rainfall that rapidly causes water to accumulate outside water bodies; (2) river floods, which are caused when persistent rainfall or snowmelt forces a river to exceed its capacity, causing water to overflow from its channel; and (3) coastal floods, which are caused by extreme sea levels associated with storm surges, high winds, high waves, or extreme high tides. Referring to analytical information resulting from a study of the International Disaster Management Organization's Disaster Database (EM-DAT), the most common types of disasters in Europe and Central Asia are four in number: floods, storms, earthquakes and extreme temperatures (4). Moreover, the trend that the data sets show for the two continents is telling: over the last 25 years, floods are the risk events that have caused the most damage while also affecting the greatest number of persons. In the period 2010-2020, with a total number of 3 533 (5), floods are the most significant number of hydrological hazards that have occurred in the Republic of Bulgaria. The latter, together with meteorological processes and phenomena, account for nearly 90% of the disasters that have occurred, leading to crises in the country (6).

Thanks to them, the processes of degradation of the existing fragile ecosystems are intensifying and are expected to worsen because climate change is increasing the frequency and magnitude of extreme weather events such as heat waves, storms and heavy rains (7).

2. ANALYSIS OF FLOODS IN THE REPUBLIC OF BULGARIA

Within this presentation, we will classify natural phenomena that can be separated into three conditional groups of natural hazards - geological, hydrological and meteorological (Mardirosyan, Rangelov, & Bliznakov, 2011; Berberova, 2019). Within each of the groups listed, we can refer as follows:

- geological hazards (landslides and earthquakes);
- hydrological hazards (floods);
- meteorological hazards (windstorms, hail, snowstorms and snowdrifts, ice and frost, droughts).

According to the definitions of hazards/events used in the methodology of the National Statistical Institute of the Republic of Bulgaria, a hazard of a hydrological nature is a flood, which is classified as follows (9):

- Rain flood - flooding of a section of land by rainfall falling directly on or running down the ground surface. This may include intense rainfall in urban areas and agricultural areas or flooding due to snowmelt.
- Infrastructure flooding - flooding for a land section of artificial reservoirs or failure of such artificial structures. This may include flooding from sewer systems (during intense rainfall events; sewer system blockage), water supply and wastewater treatment systems, artificial navigation channels and reservoirs (e.g., dams and ponds).
- Sea flooding – inundation of the land surface by seawater, estuaries or coastal lakes. This source may include inundation from the sea (e.g. extreme tidal level and/or sea level rise due to transport of water masses to the coast by sustained wind action) or sea level rise due to wave action or coastal tsunamis.
- Flooding from groundwater – Groundwater flooding occurs when the natural underground drainage system cannot carry away rainfall quickly enough, causing the water table to rise above the ground surface.
- River flooding – a type of flooding resulting from the overflow of water from a stream or river channel onto normally dry land in the floodplain adjacent to the channel.

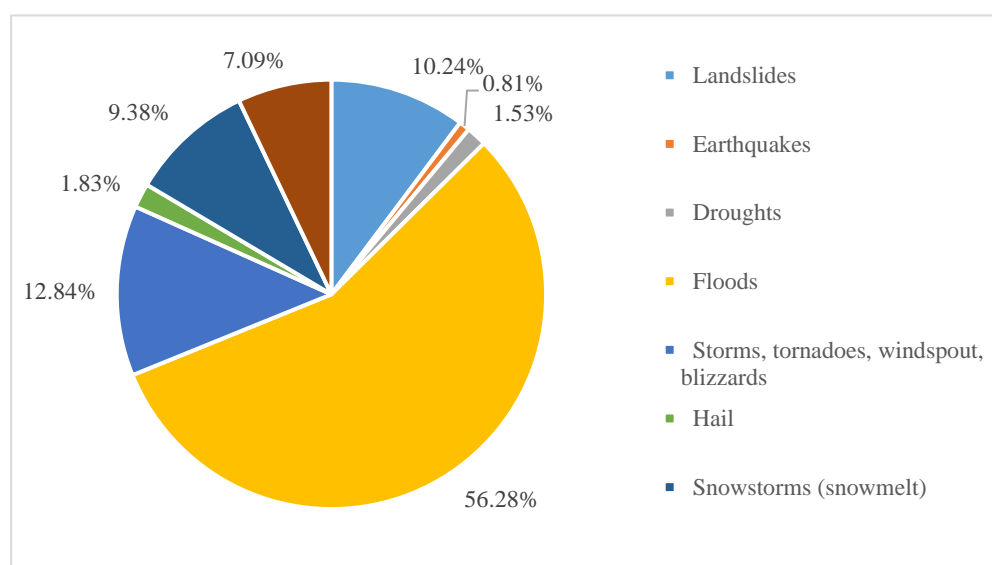
The latter account for nearly two-thirds of the total number of floods in our country (10). Analyzing the officially published data from the National Statistical Institute of the Republic of Bulgaria for the period 2010-2020 on the occurrence of crises due to natural disasters we can conclude the following (Table 1):

Table following on the next page

Indicators	Number of crisis events										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Landslides	59	76	72	51	75	125	71	32	27	31	24
Earthquakes	12	4	22	6	4	1	2	.	.	.	.
Droughts	6	30	23	3	1	.	.	28	.	4	1
Floods	651	382	692	547	360	266	184	159	84	108	100
Storms, tornadoes, windspout, blizzards	47	48	528	89	14	12	29	6	13	5	15
Hail	16	13	14	13	8	21	5	14	8	3	.
Snowstorms (snowmelt)	103	94	93	50	26	56	87	52	13	4	11
Icing, frostbite	18	134	186	20	3	7	2	52	20	1	2

*Table 1: Crisis events in Bulgaria by type of natural disaster by year, 2010-2020
 (Source: (5))*

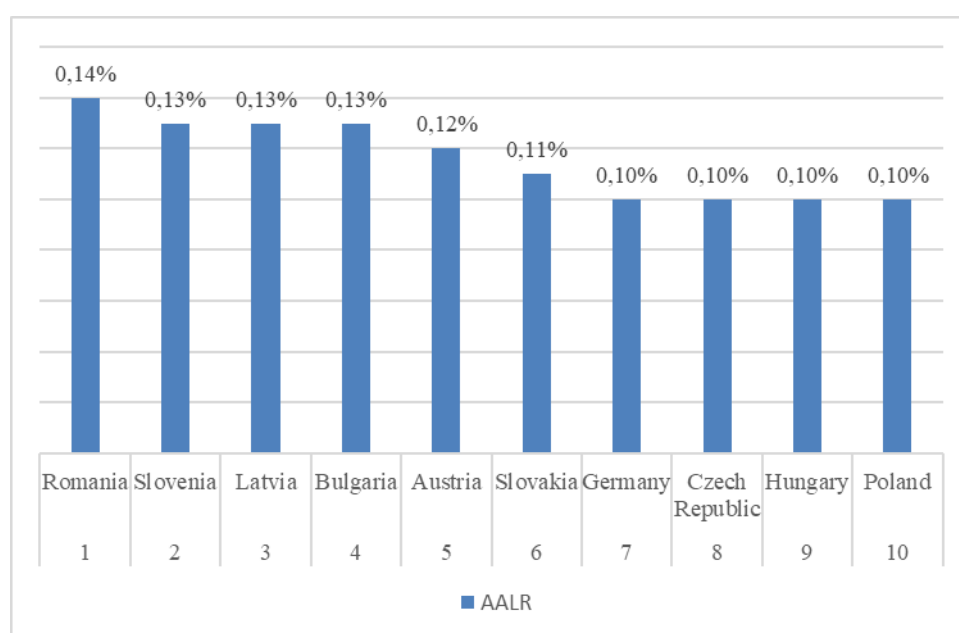
- A total of 6,278 crisis events occurred during the period, as a result of a natural disaster. The years 2012 (1,630), followed by 2010 (912) and 2011 (781) were the most saturated in terms of crisis events related to the types of natural disasters considered.
- The fewest recorded crisis events in terms of the types of natural disasters considered in the period 2010-2020 were found in 2020 – 153.
- 56.28% (3,533 pcs) were due to floods (Figure 2), which puts them in the leading position as a cause of crises in this group.
- Earthquakes occupied the smallest relative share of caused crises of natural nature - 0.81% or 51 pcs (Table 1, Figure 2).
- The ranking of the phenomena causing crises (following floods) is as follows: wind storms are the cause of 12.84% (806 pcs.), landslides - for 10.24% (643 pcs.), snowstorms and snowdrifts - 9.38% (589 pcs.), ice and frost - 7.09% (445 pcs.), hail - 1.83% (115 pcs.) and drought - 1.53% (96 pcs.) (Table 1, Figure 2).



*Figure 2: Crisis events in the Republic of Bulgaria by type of natural disaster for the period 2010-2020 (relative share)
 (Source: (5))*

In addition to highlighting the leading role of floods, among all the crises that have occurred in Bulgaria, we should also present the perspective regarding the future of this role.

For this purpose, we will resort to announcing the results of the disaster risk modelling prepared for the report of The World Bank – “Economics for Disaster Prevention and Preparedness/Financial Risk and Opportunities to Build Resilience in Europe Public”. Based on the extrapolated values, it concludes that among the EU countries with the highest risk of flooding (river and surface water) is the Republic of Bulgaria. It occupies the fourth position among the countries in the top 10 of the ranking presented in this report (11) (Figure 3). This pattern, in turn, portends more loss of life, and new destruction of economic and social infrastructure.



*Figure 3: Fluvial and surface water flood risk
 (Sources: (12,13))*

**Note: AAL = average annual loss; AALR = average annual loss ratio¹.*

Floods are one of the most common natural disasters on the territory of the Republic of Bulgaria. They have the potential to cause enormous damage as they affect urbanised areas as well as productive agricultural land and forests. In numerical terms, the statistical data on the damage caused by disasters in Bulgaria in the period 2010-2020 once again place the hydrological hazard - flooding - in the first place, with a total amount of damage of 862 728 000 BGN /441 105 822 EUR/ (Table 2). Current increases in flood risk are being driven by urbanisation and greater exposure of assets and people in flood-prone areas, but in the coming years, the impacts of climate change will overtake urbanisation as the main driver of increased flood risk (14). A chronological look at the risks that have materialised shows that there has been an increase in flash and urban flooding in Bulgaria. The trend is complemented by the fact that flash floods in rural and sparsely populated areas are mainly due to more intense rainfall events, probably coinciding with a reduction in native vegetation (mainly deforestation due to unregulated logging). At the same time, more intense rainfall in urban areas and an increase in impermeable surfaces (roads, concrete, etc.) increase the likelihood of flooding as a result of rainfall, as urban wastewater systems, which are designed for smaller volumes, cannot accommodate the higher flows (14).

¹ Annual average loss (AAL): The average amount of expected (or potential) loss over a period of many years; calculated as the sum of all modelled or simulated losses that are expected over a period of time, divided by the number of years in that period. Average annual loss ratio (AALR): AAL relative to total replacement cost of the building stock. (11) p.14

Indicators	Established damages (in BGN thousands)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total for the country	100594	487254	106160	443067	190218	191820	65243	148305	44694	34833	174517
Landslides	2182	224790	17384	294459	9291	10011	9632	7720	6248	8101	154996
Earthquakes	224	.	59037	915	62	.	.	.	.	.	.
Droughts	1	117	149	.	1	.	.	.	.	.	.
Floods	38882	206659	20898	15285	177604	171032	30617	135530	28384	21173	16664
Storms, tornadoes, windspout, blizzards	54722	1614	3488	99387	746	1640	3267	45	3266	451	561
Hail	505	50150	187	.	853	583	10	1978	89	935	.
Snowstorms (snowmelt)	441	1205	945	200	410	5436	351	757	79	600	794
Icing, frostbite	.	128	135	.	.	200	2	20	25	.	20

*Table 2: Identified damage from crisis events in Bulgaria by type of natural disaster by year, 2010-2020
(Source: (5))*

Moreover, irrespective of whether the floods were natural or man-made, the recovery from them requires the most solid resources among the individual categorized disasters that occurred in the period 2010-2020 in Bulgaria (Table 3). The total amount of funds for flood recovery for the period amounts to 574 667 000 BGN /293 822 571 EUR/, which represents 52.28% of the total funds spent on recovery from crisis events – 1 099 207 000 BGN /562 015 614 EUR/.

Indicators	Recovery funds (in BGN thousands)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total for the country	74047	424127	36167	399240	59916	23854	20709	15481	227699	22123	23543
Landslides	1881	221735	3651	291633	7102	699	3791	587	1604	3583	1830
Earthquakes	506	232	17960	1242	102	.	.	.	.	.	.
Droughts	1	.	.	.	1	.	.	.	.	.	.
Floods	16375	201136	9855	7338	51773	22665	5778	12227	216650	13523	17347
Storms, tornadoes, windspout, blizzards	53791	257	1787	98227	92	38	186	2	2274	493	543
Hail	318	120	147	.	112	.	.	1070	59	920	.
Snowstorms (snow melt)	366	266	868	.	283	401	.	168	75	600	583
Icing, frostbite	.	25	132	.	.	.	.	.	.	.	20

*Table 3: Recovery funds from crisis events in Bulgaria by type of natural disaster by year, 2010-2020
(Source: (5))*

At the same time, an analysis of publicly available data on the costs of rescue and emergency activities about floods in the period 2010-2020 in the country gives second place to floods with 60 553 000 BGN /30 960 257 EUR/ giving way only to snow storms (snow removal), which generate costs of 104 692 000 BGN /53 528 169 EUR/ (Table 4), in this ranking of the NSI.

Table following on the next page

Indicators	Expenditure on rescue and urgent emergency works (in BGN thousands)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total for the country	7513	11726	104228	21814	21529	7736	23177	4812	5553	5353	10855
Landslides	1292	775	1783	1068	2431	684	468	57	76	.	132
Earthquakes	.	.	23	15215	.	.	.	.	.	.	.
Droughts	.	13	.	.	.	.	.	.	.	.	.
Floods	4524	3289	5819	1941	18003	5204	2215	3980	4214	3509	7855
Storms, tornadoes, windspout, blizzards	111	714	1202	3350	637	343	117	16	524	37	494
Hail	307	.	34	.	.	.	.	32	30	15	.
Snowstorms (snowmelt)	173	6692	95260	9	458	1379	157	130	51	.	383
Icing, frostbite	.	70	6	.	.	.	.	20	25	30	20

Table 4: Costs for rescue and urgent emergency works in Bulgaria by type of natural disaster by year, 2010-2020
 (Source: (5))

From the floods that have occurred in the last years, included in the period under consideration, it is found that the measures taken and the activities carried out to reduce the risk of floods in the Republic of Bulgaria do not give the expected result, therefore the philosophy of management of this type of processes should be reconsidered. The direction of the necessary change concerns the course towards a policy of comprehensive and holistic flood risk management in the context of an apparent “coexistence” with them, given the results of the flood risk modelling. The European Floods Directive (in force since 2007) has set out such a comprehensive approach, based on objective assessment and responsible flood risk management. In our country, the “spirit and requirements” of this Directive have been implemented in the current national legislation through the “Water Act” (in 2010). The latter, together with several other documents such as the Disaster Risk Management Plan for Bulgaria (10), the National Disaster Risk Reduction Programme 2021-2025 (15), the Disaster Protection Act (16), the Disaster Risk Reduction Strategy 2014-2020 (17), etc., rely on the idea: flood risk reduction in our country should be predominantly carried out using purpose-built hydraulic protection systems and facilities. It also relies on precise spatial planning of the territory, as well as on improving the preparedness to counteract, prevent or reduce the negative consequences of floods with the help of a new toolkit including preventive measures, training of the population, adequate preparation, planning and technical and technological provision of rescue activities. Unfortunately, all that has been said so far confirms the dominant paradigm in disaster research, which is characterized mainly by a “straightforward acceptance of natural disaster as the result of extreme geophysical processes” and a technocratic view that the only way to address the problem is through the application of geophysical and engineering knowledge to public policy (18). In the last two decades of the twentieth century, an “editing” of the dominant paradigm occurred, imposed by the new scientific results of disaster research that became increasingly mainstream in world science. The focus is shifting towards analysing disaster phenomena through the prism of the relationality of established human-environment systems. At the same time, the process of disaster planning emerges not only through interventions in physical domains but also through transformation and modification of social forces. In the context of disasters, the latter has the consequence of reducing vulnerability by strengthening resilience (19). A fundamentally new paradigm that has gained popularity comes to the rescue here, emphasizing and exploring in detail the relationship between states of vulnerability and resilience, highlighting how disasters should be perceived within broader patterns of society (20). The newly emerging understanding of vulnerability, placed in the context of disasters, approbated by (21), consists of considering it as the inability of a person or group of persons to anticipate, cope with, resist and recover from the impact of a realised natural hazard.

It involves a combination of social, economic and political determinants, the interaction of which determines the extent to which the life and livelihood of any individual is at risk from a discrete and identifiable natural process. The parameter of 'time' plays a key role here, because in this case, it is damage to livelihoods and not only to lives and property that is at stake, with the result that it is members of vulnerable groups who will find it most difficult to rebuild their livelihoods after the disaster (21). More important in this case is how to initiate, support and sustain the building of the second element in the new paradigm – sustainability. Disasters present the best opportunity to decipher socioeconomic dysfunctions. In this line of thought, the toolkit that the established social protection systems and their institutions will have at their disposal to eliminate these dysfunctions plays a key role in the recovery period. It is precisely the recovery phase that is an excellent opportunity to test the building of resilience among those affected and to assess social assistance system settings in the Republic. The functioning of the social assistance system in Bulgaria is based on the criterion of need and is implemented through a non-contributory transfer of resources in the form of social benefits to individuals who are at risk of falling into or living in poverty. The public impact thus provided is aimed at meeting the individual needs of those perceived (in objective terms) to be poor or at risk of poverty. Such an interpretation directly links the size of social benefits to the poverty line, while at the same time redefining their main purpose – to supplement disposable income or to guarantee a minimum income (in the absence of such) within a socially acceptable value norm. In this sense, the expected effects of the functional manifestation of social assistance as an element of the social protection system should be sought in the following directions:

- reducing poverty, generating equity and achieving social cohesion, enhancing the development of integrated human capital and strengthening gender equality, which directly corresponds to the distinctly "social" nature of this form of public impact;
- respect for civil rights in the context of the social contract to achieve sustainability and prosperity in national capacity building, as a reflection of the legal regulation and political interpretation of existing social problems;
- Increasing economic growth, maintaining or sustaining GDP growth, and stimulating local markets by optimising distributional processes in society.

3. INSTITUTIONAL RESPONSE FROM THE SOCIAL ASSISTANCE SYSTEM AND THE SOCIAL PROTECTION FUND (SPF)

3.1. Social benefits for flood victims under the Social Assistance Act

In the Republic of Bulgaria, the conditions and procedures for granting social benefits are legally regulated by the Social Assistance Act (SAA) and the Regulations for the Implementation of the Social Assistance Act (RISAA). Their granting is subject to a specific regime, including several statutory conditions and requirements concerning income, property and health, employment, etc. Social benefits are granted based on an application declaration submitted to the Social Assistance Directorate (SAD) in the country. Based on Article 8 of the RISAA, social benefits are granted to individuals and families at their current address, where the social enquiry takes place. Within 20 days of the submission of the application, a social worker conducts a social inquiry at the address and prepares a reasoned proposal to the Director of the SAD for granting or refusing the aid, making a comprehensive assessment of all the facts and circumstances of a social, family, household and health nature. Within 7 days of the preparation of the social report, based on the findings, the Director of the SAD shall issue an order granting or refusing the aid. The regulation of Article 16 of the Regulations for the Implementation of the Social Assistance Act provides for a legal possibility to support individuals and families for the satisfaction of occasional health, educational, utility and other vital needs, by granting a one-off aid once a year.

It shall be granted if two cumulative conditions are met: that there is an incident and that the family is unable to meet the unforeseen expenses from its resources. At the time of the social enquiry, the declarant must prove beyond reasonable doubt that a sudden, unforeseeable, unexpected or extraordinary need has arisen, that the occurrence was not anticipated or foreseeable by the person and his/her family and disrupts his/her normal way of life, and that the satisfaction of the need requires expenditures that are outside the range of regular expenditures. The amount of the assistance shall be determined by order of the Director of the SAD or his/her designee, based on all facts and circumstances. Until 31.05.2023 the maximum amount of the one-off aid was up to 5 times the amount of the Guaranteed Minimum Income - up to 375 BGN /191 EUR/ (5 x 75 BGN), and from 01.06.2023, after linking the social benefits to the poverty line - up to 3 times the poverty line - up to 1512 BGN /773 EUR/ for 2023 (3x504 BGN), and up to 1578 BGN /806 EUR/ for 2024 (3x526 BGN). Since 2016, the Agency for Social Assistance (ASA) has operated a web-based Integrated Information System (IIS) from which information can be provided on the number of lump sums granted to individuals/families under Article 16 of the Regulations for the Implementation of Social Assistance and the amounts paid. In response to an official Request for Access to Public Information to the ASA, requesting official information on the number of flood victims only and the amount of amounts under Article 16 of the Regulations for the Implementation of the Law on Social Assistance received from them in the period 2010-2023, it was found that for social assistance, no need has been identified so far for the information in the Integrated Information System to be differentiated according to the type of incidentally occurring needs - health, education, utilities, disasters, etc., and therefore analytical reporting of lump-sum grants according to the type of incident, including natural disasters, is not carried out and cannot be subject to accurate analysis. In connection with the extremely high intensity of natural disasters on the territory of the country in 2023 and the increased media interest in the support provided to the affected persons, the ASA started to keep separate statistics, according to which for the period June-December 2023 by Article 16 of the Regulations for the Implementation of the Law on Social Assistance were paid one-time flood benefits as follows:

- Month June 2023 - floods in Montana, Sofia city, Sofia region, Vidin, Vratsa, Varna, Veliko Tarnovo - aid granted to 245 families for a total of 246 100 BGN /125 828 EUR/;
- Month September 2023 - flood in Burgas region - 47 families received assistance for a total of 43 304 BGN /22 140 EUR/;
- Month November 2023 hurricane with heavy rains in Varna district - aid granted to 15 families for a total of 17 384 BGN /8 869 EUR/.

In addition, in connection with the 2023 floods, the Bulgarian government granted additional aid to support individuals and families whose properties were affected:

- By Decision of the Council of Ministers of the Republic of Bulgaria No. 636/21.09.2023 it was approved the payment of a one-off financial aid to the heirs of the persons who died in the flood due to the heavy rainfall on the territory of the municipality of Tsarevo on 5 and 6 September 2023. The heirs of 4 deceased persons are supported with 15 000 BGN /7 669 EUR/ one-off financial aid for each deceased person.
- By Decision of the Council of Ministers of the Republic of Bulgaria No. 811 of 17.11.2023 approving the payment of one-off financial aid to the victims of the natural disasters of 04.11.2023, in the districts of Smolyan, Silistra, Razgrad, Targovishte, Shumen and Varna, it has been determined that the persons and families whose properties have been affected and have suffered damages will be granted such aid for 1 512 BGN /773 EUR/. A total of 422 families were assisted for 638 064 BGN /326 236 EUR/.

3.2. Financial support under the Social Protection Fund

By Order No. RD-25-2/18.01.2023 of the Deputy Prime Minister for Social Policies and Minister of Labour and Social Policy, a Notice for opening a procedure for granting social assistance (the Notice) from the Social Protection Fund was approved. By Order of the Minister of Labour and Social Policy No. RD-25-7 of 20.07.2023, a new Announcement has been approved, which eases the procedure for applying for social assistance from the Social Protection Fund. The Board of the Social Protection Fund, at its meeting on 12 July of the same year, decided to change the mechanism for granting social assistance. The aim is to facilitate the application procedure in crises, e.g. flood, earthquake, fire, and to broaden the scope of assisted individuals and families.

In 2023, social assistance was provided to individuals and families affected by crises such as flood, earthquake, fire, or other disaster in the following two hypotheses:

- 1) For forthcoming expenditure on the purchase of equipment/furnishings for the housing/apartment in a residential building affected by the crisis.
- 2) For the reimbursement of the costs of equipment/furnishings purchased for the housing/apartment in a residential building affected by the crisis, in the period after the occurrence of the crisis and before the submission of the application - the costs must have been incurred after the approval of the notice, i.e. after 18.01.2023.

The assistance was granted by the Social Protection Fund after all other statutory possibilities had been exhausted - the persons/families had realised their right to one-off assistance in connection with the crisis under Article 16 of the Regulations for the Implementation of the Social Assistance Act, had received assistance from the relevant municipal administration at their current address (if available), had not received funding for the same activities (equipment/furnishings). The commitment of the ASA was limited to providing information, upon request from the Social Protection Fund, to verify whether the person/family has received one-off social assistance under Article 16 of the Regulations for Implementation of the Social Assistance Act. Eligible target groups are individuals and families who simultaneously meet the following conditions:

- the affected dwelling/building is legally constructed and legally occupied by the persons;
- they have exercised their right to one-off crisis assistance by Article 16 of the Regulations for the Implementation of the Social Assistance Act from the Social Assistance Directorate in whose territory the dwelling at their current address is located;
- have received one-off assistance from the municipality, if available;
- have not received funding for the same activities under any other procedure.

The aid is granted after the victims apply a form to the municipal administration of their current address and submit all necessary documents. A person/family can receive a one-off payment of up to 2 500 BGN /1 278 EUR/. At the time of this study, information on the number of flood victims and the amounts of the targeted assistance granted for the purchase of equipment/furnishings for the housing/apartment in a residential building affected by this crisis, received by them for the year 2023 is not yet available in the information files on the website of the Social Protection Fund, therefore no assessment could be made on the mass of applications, respectively the implementation of this type of institutional support.

4. CONCLUSION

The alarming finding that since the beginning of this century, the Republic of Bulgaria has become a frequent target of flood damages causing unprecedented economic losses plus the unfavourable prospects based on scientific models for the future development of this risk is reason enough for it to be studied and analysed from all possible perspectives.

And if in terms of the technocratic view that the only way to deal with flood risk, relying mostly on the application of geophysical and engineering knowledge promoted in the field of public policy, enough has been done, then referring to the information presented about the systematic response that public social assistance has in support of flood victims in Bulgaria, there are certain deficits, that is, there is more to be done. It is obvious that after the numerous "lessons" of the last two decades, the state in the face of the ASA and the SFA has: 1) recognized the crisis event "flood" as an extremely serious problem, which should not be underestimated and for the solution of which a purposeful and consistent state social policy with a focus especially on the vulnerable and the poor in Bulgarian society, whose reflection in the event of such a crisis is negligible; 2) is pursuing a catching-up policy in terms of the adequacy of social protection measures, including in terms of alternative sources of funding, as is the practice in several EU Member States; and 3) has taken steps in the right direction, including significantly more tangible financial support targeted at flood victims, compared to the hitherto exclusively "symbolic" aid.

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NEW SOCIAL TRANSFORMATIONS AND CHANGES IN SOCIETIES

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ABSTRACT

In this publication, we set ourselves the objectively complex task of analyzing the possibilities of strategic decision-making in times of crisis, attempting to make a partial analysis of the ongoing crisis caused by the dynamically changing environment. Crisis circumstances require societies to quickly rethink and develop adequate strategies and accordingly formulate strategic goals and plan processes. In many cases, preliminary analysis and assessment are practically impossible, and this necessitates a different operational order of solving the problems, which involves the use of non-traditional approaches and methods, and then carrying out planning, unobjectified by concrete and accurate analysis. All this puts whole systems and societies to the test, and those who are empowered to manage the process - under strong pressure from unforeseen circumstances and not always objective judgments. Which in turn creates a number of subsequent critical problems in the management process. Social transformations and new social processes are qualitatively new and occurring rapidly, and present societies with unusual challenges.

Keywords: *Social Programming, Development, Social Economy, Social efficiency, Science, Indicators, Measurement*

1. INTRODUCTION

Setting goals and planning process actions in process management, and on a larger scale – strategic management during crisis is even more challenging. In accordance with the definitions of “crisis”, in the broadest sense, crisis management is of strategic importance, as it is always a matter of rescuing and surviving of people, territories, sites, etc. On the one hand, crisis management corresponds to the principles of general management, but on the other hand, it is complex enough, which derives from the fact of rapidly and dynamically changing environment – both national and international. This is most often and clearly observed during crisis circumstances that affect a very large part of the population of a country, region, continent or even the whole world. Crises have a diverse nature, both in scope and in nature, and their management is correlated with this. Different options are considered for the development of strategies in crisis situations, depending on whether they relate to one administrative area, country, group of countries or cover the world. Overcoming crises, as well as liquidating their consequences, represent a particular challenge. Managing processes in such complex and unpredictable situations requires the preparedness of the heads of the different countries. Social systems are subject to particular stresses, and this even calls into question their existence as such. These are extremely interesting processes from a scientific and research point of view. Their analysis, study, and modeling would create conditions for a strategy for their management.

2. THE FORMATION OF THE NEW SOCIAL SYSTEMS

Social systems have their own characteristics and they cannot exist by themselves. Regardless of the fact that different definitions and different interpretations are found in the scientific and

popular literature, they are those that form the social attitudes of the individuals (people) in the environment. Countries can be seen as social systems, even the world can be seen as one social system. A welfare state is a form of government in which the state (or a well-established network of social institutions) protects and promotes the economic and social well-being of its citizens, based upon the principles of equal opportunity, equitable distribution of wealth, and public responsibility for citizens unable to avail themselves of the minimal provisions for a good life (2024). There is substantial variability in the form and trajectory of the welfare state across countries and regions (Béland et al., 2021). All welfare states entail some degree of private–public partnerships wherein the administration and delivery of at least some welfare programs occur through private entities (Béland and Morgan, 2021a). Welfare state services are also provided at varying territorial levels of government (Béland and Morgan, 2021a). Early features of the welfare state, such as public pensions and social insurance, developed from the 1880s onwards in industrializing Western countries (Skocpol, 1995; Béland et al., 2021; Koehler–Derrick and Lee, 2023). World War I, the Great Depression, and World War II have been characterized as important events that ushered in the expansion of the welfare state (Skocpol, 1995; O'Hara, 1999). The fullest forms of the welfare state were developed after World War II (Béland et al., 2021). The German term *sozialstaat* (“social state”) has been used since 1870 to describe state support programs devised by German *sozialpolitiker* (“social politicians”) and implemented as part of Otto von Bismarck's conservative reforms (Fay, 1950). The literal English equivalent “social state” did not catch on in Anglophone countries (Smith, 1901). However, during the Second World War, Anglican Archbishop William Temple, author of the book *Christianity and the Social Order* (1942), popularized the concept using the phrase “welfare state” (Gough, 1989). Bishop Temple's use of “welfare state” has been connected to Benjamin Disraeli's 1845 novel *Sybil: or the Two Nations* (in other words, the rich and the poor), where he writes “power has only one duty – to secure the social welfare of the PEOPLE” (Disraeli, 2024a). At the time he wrote *Sybil*, Disraeli (later a prime minister) belonged to Young England, a conservative group of youthful Tories who disagreed with how the Whigs dealt with the conditions of the industrial poor. Members of Young England attempted to garner support among the privileged classes to assist the less fortunate and to recognize the dignity of labor that they imagined had characterized England during the Feudal Middle Ages (Alexander: *Medievalism*). Before looking in detail at the ongoing processes in social systems, it is good to clarify the concept of social structure. Social structure is a term used in sociology and the social sciences to denote characteristically constructed social formations that make society as a whole and that determine to some extent the actions of individuals socialized in that structure. The meaning of the term social structure has different applicability. In macro sociology, it is a system of socioeconomic stratification, social institutions, or certain relations between large social groups. In meso-sociology, it is a social network structure that creates connections between individuals or organizations. In micro sociology, it can also be how norms determine the behavior of individuals in a social system. Social systems function under the organization of certain rules. These rules are created to satisfy certain needs of the individuals who participate in a given social system. The development of social systems leads to a distortion of the set of existing rules, which becomes unacceptable to individuals. This is one of the prerequisites for implementing change in social systems or their destruction. The period of transformation of one social system into another is usually accompanied by cataclysms that societies experience. Historians speak of cyclicity in the change of social systems, which has only some accuracy in such logic. However, it should be emphasized that the changes that occur in social systems are caused by certain circumstances and factors that have an impact on the system itself. The turbulence that precedes certain transformations in the social system is a signal that the period of system change is soon. Signals of changing social systems are a large set of events and actions that occur in a certain sequence.

Such can be the frequent regional military conflicts and tensions in certain communities that create discomfort in the coexistence of a certain group of people and many others. A significant problem is the divergence in action between those who manage social systems and those who participate in social systems. When the expectations of the one and the other are in different directions, the rupture in this social system is completely predictable and expectedly possible. All the elements of a state of tension of existing social systems are present. The internal and external environments function in a series of defect processes. This not only creates a sense of failure in their existence but also foreshadows many transformations to come. The rules created for the normal functioning of these social systems have exhausted their essence and must be replaced by other rules that satisfy the existence of the new social systems. Even a basic survey of the behavior of the leaders of the existing social societies speaks unequivocally that a dramatic change is coming, in which all participants will be subjected to certain loads, even tensions during this period of active transformations. The changes that will have to be accepted by the individuals participating in these new public social systems may turn out to be overwhelming for some of them, for others - unacceptable, and for others - an objective impossibility to physically survive this transformation. They are looking for the creation of new social systems, which will condition new rules of interaction in them, which will also form new types of social relations. Undoubtedly, the newly formed social leaders will play a key role in these transformations. This process of active and preferential influence of social leaders is known historically. The dominant influence of strong social leaders was also evident after the end of the two world wars. Their decisions affect both large and small social systems. The rules of functioning of the transformed social systems are set and partially shaped by the new social leaders of the historical moment. The inevitability of such a process is almost impossible to predict with absolute accuracy, but considering that such processes take approximately several years, it can be said that we are already in a stage of the period of active social transformations. The lack of research in this direction and the possibility of planning and forecasting these processes is puzzling. Even if we assume that some of them are under the guise of protecting national security, the deepening of research in this direction must happen quickly enough and with the possibility of the participation of researchers with high expertise in various fields.

3. FORMATION OF THE NEW SOCIAL CENTERS

The changes that are taking place of a geopolitical nature also imply social changes in social systems. Many analysts predict drastic changes in social relations, which will lead to the formation of new spheres of influence. Whether this will happen and especially when it will happen is a question from the point of view of a specific strategic analysis. Despite the impossibility of analyzing with a certain precision the multidirectional information in this plane, it can be concluded with a great deal of objectivity that several main centers of influence. These centers have the economic, financial, military, political, and cultural capacity to influence social systems. They have a high power of influence that they can even model them. To a certain extent, this gives us an objective possibility of predictability, and on the other hand, it also predicts uncertainty in the direction of development of these processes.

3.1. World financial centers formed

We can consider financial centers as one of those that can significantly influence the ongoing transformations in social systems. New York retains the top spot in the ranking of global financial centers by the Z/Yen Group. London and Singapore also retain their positions in second and third place respectively in the 33rd edition of The Global Financial Centers Index (GFCI). The 33rd edition of the Global Financial Center Index (GFCI 33) provides future competitiveness assessments and rankings for 120 financial centers around the world. GFCI serves as a reference for policy and investment decision-makers.

The China Development Institute (CDI) in Shenzhen and Z/Yen Partners in London are collaborating on the development of the GFCI. GFCI is updated and published every March and September and receives considerable attention from the global financial community. 130 financial centers are surveyed for GFCI 33, of which 120 are in the main index. The GFCI is compiled using 153 instrumental factors. These quantitative measures are provided by third parties, including the World Bank, the Economist Intelligence Unit (EIU), the Organization for Economic Co-operation and Development (OECD), and the United Nations. Instrumental factors are combined with financial center ratings provided by respondents to the GFCI online questionnaire. GFCI 33 uses 61,449 ratings from 10,252 respondents (2024b).

3.2. World economic centers formed

The formed world economic centers, even in the presence of divergent assessments of their capacity, define the USA, the European Union and Asia as such. Usually, the main indicator that is predominantly used is the Gross Domestic Product per capita. However, this only shows part of the economic picture in determining these centers.

3.3. World military centers formed

The military power of the states is determined by a number of indicators, with a significant advantage given by high-tech armament and preparedness. Five countries have the largest armed forces, as follows: China (2,255,000), USA (1,420,000), India (1,414,000), Russia (1,120,000), Democratic People's Republic of Korea - 1,106,000. The countries - South Korea, Pakistan, Iran, Turkey, Vietnam - also have a large number of armed forces (2024c).

3.4. World political centers

The influence on the formation of public relations on a global scale is undoubtedly exerted by several political centers. Washington (USA), which in the last decades was the undisputed leader in almost all respects and had an irresistible opportunity to determine to a large extent the public policies of many countries, even to change them and redirect them to different spheres of its influence. The forceful imposition of certain policies was part of this hegemon behavior. Of course, it has always been limited or contested by other contenders. The dynamic development of the processes determines the definition of several main centers, such as Moscow (Russian Federation) and Beijing (People's Republic of China). In no case can their influence be defined as only regional. Their behavior in the last few years has determined that they hold major political influence. We should note that both countries in different historical periods had one. Several more political centers can be identified on the various continents, whose influence exceeds their regional importance. This is only a brief analysis of the factors that can and do significantly influence the determination of several major centers of influence that will be instrumental in the formation of the new social systems. It is indisputable that they will not give up exerting their all-round influence on the social transformations that have already begun, they will even try to define and single out larger spheres of influence.

4. THE ROLE OF SOCIALLY DOMINANT LEADERS IN THE EMERGENCE OF CRISES

The fear of happening realities turns out not to be exaggerated not only in our realities but also in our accompanying being. The confusion of conflicting and ambiguous messages that put us in a state of disarray as people who have clear and coherent logical thinking increasingly feeds our fears. Although we are used to the half-baked and even sometimes lyrical political messages that are thrown as messages on the political market in Bulgaria and Europe, lately we feel more and more a strong concern from the more balanced and more diplomatic political leaders.

Their personal and political prudence has put us in the extremely unattractive position of waiting a long time for something to happen, and this against the background of their becoming public knowledge of their wanderings in search of certain solutions for which they have proved to be quite unprepared. Personal and collective living in yet another political system has exhausted its significance both for those who consume it and for those who observe it from the outside. The inability to self-preservation and to react to the changing world is an unequivocal answer that she is looking for her new and completely different transformation. These periods of transformation are usually accompanied by severe and painful transitional states, which are accompanied by many and varied conflicts. No matter how simplistic all this sounds, it has a definite and strong logical, and not only, basis - we should not underestimate our historical memory in this direction, which would prove these statements of ours with a high degree of relativity. The immediate question would be - how and what happens to the political reality? The next one is not at all useless - but what happens to ourselves? And if the answer to the second question is relatively easier, then the answer to the first is of a much more complex nature, both in substance and process nature. Eventually, we will have to go through periods of active transformations of our entire social system in one way or another, which will also include a change in political models of existence. If by a social system, we understand the whole set of relations, it would be practically more grounded and more realistic. The failures and ups and downs of existing political realities are many and have their essential differences. Comparing and explaining them is important, as it can bring some benefits in our movement forward, as well as explaining the new processes taking place. These processes will bring elements that we know well and even read and explain well, but also elements that will surprise us and will be new with their high sensitivity. The defective political reality will try to preserve some of its elements, which it will successfully carry over into future periods. This is of course quite uncertain, even unlikely, because these elements exist in one relationship with all others, and even if some of them survive in one form or another, they will have a different relationship with others that are now created. If we are in the position that the defects in these political realities have already passed the possibility of being repaired or tamed in the sense of the accumulated grievances of the people, then their destruction will occur at an avalanche speed. The consequences of the defective political reality will be felt with different strengths and to different degrees. This is quite reasonable because they will be at different distances from the source of these processes. These influences will have a set of fluctuations that will be misunderstood by those involved because they are new and unpredictable in nature and consequences. Giving organic examples of these processes in specific concreteness as signals of what is happening can be found even now. We have built up a certain sensitive tolerance to different processes because we do not know them, and we do not have enough time to explore them. All of this comes against a background of numerous emerging signals from different places. Their power is increased by the ability of those who create them and those who transmit them. Certainly, those with the best array of active elements are the best and fastest at creating and transmitting these signals. Their creators are in a process of struggle not for survival, but for dominance. This process will form groups that will try to create new dependencies that will define the new social reality. Determining the zones of influence will also give rise to the social importance of those who are contenders for certain leadership in this environment. More important will be how these new socially dominant leaders will determine or create the system of social relations that will determine the creation of new social systems. Political realities or systems will be the consequence of these new social relations. Turbulences in these formed new social systems will last from a historical point of view for a very short time and from the point of view of the participants in them - for a very long time. These processes have a high complexity and are almost unpredictable as a final result.

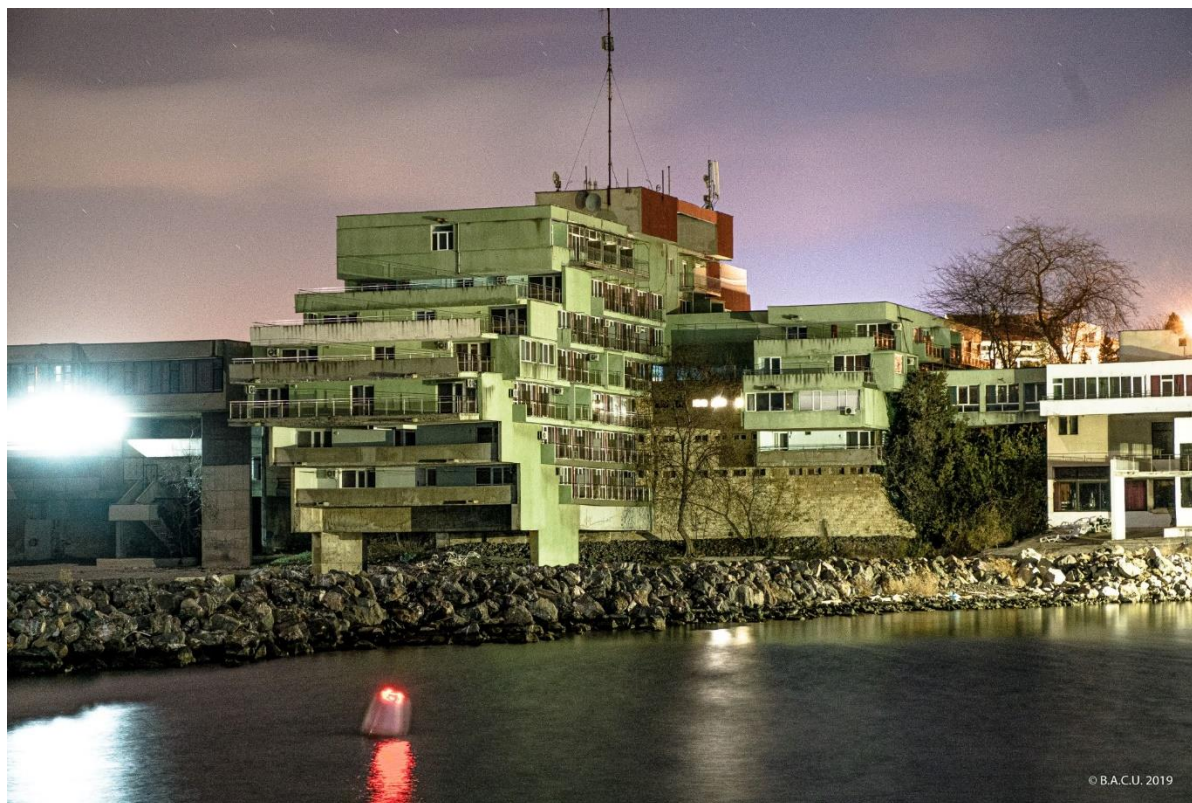
Even if we have information and sufficient data about their progress, the power of influence of certain elements cannot be accurately and faithfully defined and measured, which will generate frequent and unpredictable changes. That the social system is changing under the pressure of the multitude of social defects is almost visible to all, and is felt in certain and varying degrees. Much more interesting is how we will manage to pass through this long and sufficiently unpredictably difficult period, which we can unequivocally define as a process. It is unlikely that we will be able to have the kind of preparedness that would put us in a sufficiently favorable position so that everything happens in a certain acceptability for all participants. Anxiety grows with the constant multi-directionality of signals and with the succession of emerging social defects in the system. We know that a system - whatever it may be - must have a certain efficiency, which is also associated with a particular financial significance. Whether those trying to be the leading elements in the creation of the new social system have the knowledge and willingness to accept the dependencies that have existed so far is difficult to predict. It is obvious that this system of social efficiency also creates problems in its existence. The problems that can be defined are behavioral. As unacceptable as all this may sound, all too often the behavioral patterns of a particular individual have so altered a particular social system that it has been preserved long enough without interest in any effective relationships. It is possible that certain behavioral elements again sensitively influence the already started process and bring it to a certain stage in which the new realities will have a different meaning. The easiest conclusion would be to wait and see what happens in the end. But whether and how we will have this opportunity and whether as direct participants we will be able to evaluate this process? It is best to make some effort to ensure some preparedness for all of this. Even if we appreciate and realize that the signals that we will create and transmit will be relatively small in strength, perhaps we should consider that it would be much greater if there is an essential content that is a response to these ongoing processes. Historians with a dose of authoritative academic conviction argue that history always moves forward. There is a certain timidity in their current messages, combined with an unintended sense that history may be repeating itself in one form or another. If you answer at least part of the questions asked, or at least think deeply and unprejudiced about them, it can protect us from those repetitions that we would not like to happen (Terziev, 2022a; 2022b; Terziev and Lyubcheva, 2022c; Terziev, 2022d; 2022e; Terziev and Solovev, 2022f; Terziev, 2022g). From a historical point of view, there are enough examples in which transformations and changes in social systems were mostly influenced by new social leaders. This has drastically changed the social systems themselves and created qualitatively new and different conditions for their existence and development. Another issue is their sustainability over time. A characteristic example is the social system of socialism. Despite the knowledge of its theoretical foundations, its leaders in the Union of Soviet Socialist Republics exerted a major influence. Such are Vladimir Ilyich Lenin, Chairman of the Council of People's Commissars of the Union of Soviet Socialist Republics, Joseph Vissarionovich Stalin - General Secretary of the Central Committee of the Russian Communist Party (Bolsheviks), Chairman of the Council of Ministers of the Union of Socialist Republics (from March 15, 1946), Nikita Sergeevich Khrushchev - First Secretary of the Central Committee of the Communist Party of the Soviet Union, Leonid Ilyich Brezhnev - General Secretary of the Central Committee of the Communist Party of the Soviet Union, etc. Socialism is a political philosophy and movement encompassing a wide range of economic and social systems (Busky, 2000a) which are characterised by social ownership of the means of production (Busky, 2000a), as opposed to private ownership (Horvat, 2000b; Arnold, 1994a; Hastings et al, 2000c). As a term, it describes the economic, political, and social theories and movements associated with the implementation of such systems (The Free Dictionary, 2024d). Social ownership can be public, community, collective, cooperative (Sherman and Zimbalist, 1988; Rosser and Rosser, 2003a; Badie et al., 2011a), or employee (Horvat, 2000b; O'Hara, 2003b).

While no single definition encapsulates the many types of socialism (Lamb and Docherty, 2006a), social ownership is the one common element (Arnold, 1994a; Hastings et al, 2000c). Socialism is traditionally placed on the left-wing of the political spectrum (Left, 2024e). Different types of socialism vary based on the role of markets and planning in resource allocation, on the structure of management in organizations, and from below or from above approaches, with some socialists favouring a party, state, or technocratic-driven approach. Socialists disagree on whether government, particularly existing government, is the correct vehicle for change (Nove, 2008a; Docherty and Lamb, 2006b). Socialist systems are divided into non-market and market forms (Kolb, 2007). Non-market socialism substitutes factor markets and often money with integrated economic planning and engineering or technical criteria based on calculation performed in-kind, thereby producing a different economic mechanism that functions according to different economic laws and dynamics than those of capitalism (Bockman, 2011b). A non-market socialist system seeks to eliminate the perceived inefficiencies, irrationalities, unpredictability, and crises that socialists traditionally associate with capital accumulation and the profit system in capitalism (Nove, 1991). Market socialism retains the use of monetary prices, factor markets and in some cases the profit motive, with respect to the operation of socially owned enterprises and the allocation of capital goods between them. Profits generated by these firms would be controlled directly by the workforce of each firm or accrue to society at large in the form of a social dividend (Marangos, 2004; O'Hara, 2003b; Pierson, 1995a). Socialist parties and ideas remain a political force with varying degrees of power and influence on all continents, heading national governments in many countries around the world. Socialist politics have been both internationalist and nationalist; organised through political parties and opposed to party politics; at times overlapping with trade unions and at other times independent and critical of them, and present in both industrialised and developing nations (Newman, 2005a). Social democracy originated within the socialist movement (Ely, 1883), supporting economic and social interventions to promote social justice (Merkel et al., 2008b; Heywood, 2012). While retaining socialism as a long-term goal (Roemer, 1994b), since the post-war period social democracy came to embrace a mixed economy based on Keynesianism within a predominantly developed capitalist market economy and liberal democratic polity that expands state intervention to include income redistribution, regulation, and a welfare state (Badie et al., 2011a). Economic democracy proposes a sort of market socialism, with more democratic control of companies, currencies, investments, and natural resources (Smith, 2005b). The socialist political movement includes a set of political philosophies that originated in the revolutionary movements of the mid-to-late 18th century and out of concern for the social problems that socialists associated with capitalism (Lamb and Docherty, 2006a). By the late 19th century, after the work of Karl Marx and his collaborator Friedrich Engels, socialism had come to signify anti-capitalism and advocacy for a post-capitalist system based on some form of social ownership of the means of production (Gasper, 2005c; Giddens, 1998). By the early 1920s, communism and social democracy had become the two dominant political tendencies within the international socialist movement (Newman, 2005d), with socialism itself becoming the most influential secular movement of the 20th century (Kurian, ed., 2011c). Many socialists also adopted the causes of other social movements, such as feminism, environmentalism, and progressivism (Sheldon, 2001).

Picture following on the next page



*Picture 1: Large mosaic wall with mining theme. the 70s. Valea Jiului, Romania. Artists: Elena Bianu, Iosif Tellmann.
(Source: B.A.C.U (Birou pentru Artă și Cercetare Urbană)/ Photo Dumitru RUSU).*



*Picture 2: Hotel Pomorie, Pomorie, Bulgaria. Built in (1976). Architect Nikolai Damov.
(Source: B.A.C.U (Birou pentru Artă și Cercetare Urbană)/ Photo Dumitru RUSU)*



Picture 3: Residential apartments, Tashkent, Uzbekistan, Built in the 80s. Architect Victor Breusenko.

(Source: B.A.C.U (Birou pentru Artă și Cercetare Urbană)/ Photo Dumitru RUSU)



Picture 4: The "Choice" Shopping center, Montenegro, Bar. Built in 1984. Architect: Batric Mijovic.

(Source: B.A.C.U (Birou pentru Artă și Cercetare Urbană)/ Photo Dumitru RUSU)



*Picture 5: "Tashkent" Housing building type ITSP, Chisinau, Moldova, built in 1978, TashGIPROgor.
(Source: B.A.C.U (Birou pentru Artă și Cercetare Urbană)/ Photo Dumitru RUSU)*



*Picture 6: "Matei Ambrozie" Commercial Complex, Camil Ressu bd., Bucharest, Romania, built in the late 70s.
(Source: B.A.C.U (Birou pentru Artă și Cercetare Urbană)/ Photo Dumitru RUSU)*



179. Шасс – Кобелев.
Ленин и электрификация. 1925

Picture 7: Poster from the time of socialism from the USSR.

While the emergence of the Soviet Union as the world's first nominally socialist state led to socialism's widespread association with the Soviet economic model, several scholars posit that in practice, the model functioned as a form of state capitalism (Chomsky, 1986; Howard and King, 2001a; Fitzgibbons, 2002). Several academics, political commentators, and scholars have noted that some Western European countries have been governed by socialist parties or have mixed economies that are sometimes called "democratic socialist" (Barrett ed., 1978; Sanandaji, 2021b). Following the end of the Cold War and the revolutions of 1989, many of these countries have moved away from socialism as a neoliberal consensus replaced the social democratic consensus in the advanced capitalist world (Sanandaji, 2021b), while many former socialist politicians and political parties embraced "Third Way" politics, remaining committed to equality and welfare, while abandoning public ownership and class-based politics (Socialism, 2023a). Socialism experienced a resurgence in popularity in the 2010s, most prominently in the form of democratic socialism (Judis, 2019a; Cassidy, 2019b). A vivid example of a new social leader who, through his personal views, changes and even helps to cease the existence of a social system. This is Mikhail Sergeevich Gorbachev - General Secretary of the Central Committee of the Communist Party of the Soviet Union and President of the Union of Soviet Socialist Republics. In implementing his domestic policy, Mikhail Gorbachev tried to implement economic reforms that would contribute to a change in the standard of living. This is the so-called "perestroika" policy. His reforms were ineffective and failed to achieve substantial direct results and change the existing system of planned and command economy. The existence of the socialist social system is characterized by its peculiarities. The specific architecture of socialism (Photo 1-6) as well as the propaganda posters have their specific messages (Photo 7-9).



92. Ефимов Б.
 Капитан Страны Советов ведет нас от победы к победе! 1933

Picture 8: Poster from the time of socialism from the USSR.



220. Клуцис Г.
 Выше знамя Маркса, Энгельса, Ленина и Сталина! 1936

Picture 9: Poster from the time of socialism from the USSR.

It would be important to study the ongoing modern processes that require rapid and sudden changes in social systems. Whereas in the recent past, there were certain indications of the changes taking place that could be examined and analyzed, now the changes that are occurring are sudden and rapid. The emergence of new social leaders creates conditions through their behavior, ideas, interests, and even a set of irrational views to transform the existing social systems. The influence of the new social leaders can be presented as sensitive and in many cases decisive for the transformations taking place. It is necessary to identify a new criterion apparatus that objectively and quickly enough gives us true and accurate information. The reliability of this venture is rather difficult to determine. Social processes in a period of severe crisis situations are accompanied by a high speed of their progress. Their detailed and systematic description and subsequent analysis are almost impossible. The search for specific research approaches is mandatory in these situations. The study of the behavioral patterns of dominant social leaders is of particular importance. Here any researcher would face two sets of problems. The first is related to obtaining sufficiently accurate and true information, which is handled by statistical methods of analysis, as well as sociological methods. This will create a particular difficulty in using both of them. The accessibility of this type of information and data is difficult to collect, but even if they succeed somewhere, it will be filtered in a special way by

the relevant state-engaged security services. The second group of problems will arise when assessing the development of the behavioral model of the respective individual who has acquired the role of a socially significant and dominant leader. Knowledge and his personal characteristics will have undergone various transformations during the period of his rule, namely, these characteristics will not have been public enough, and the information we will get will be from the mass media or other public meetings. Overcoming the two groups of difficulties may in certain situations be insurmountable and the use of similar approaches for the implementation of research activity – is impossible. Regardless of the research situation in which we will find ourselves, it is necessary to look for opportunities to study the influence of socially dominant leaders on social processes. Similar and analogous examples from a historical point of view can be cited with quite success. Even if we conditionally accept the two world wars as such severe crises, the actions of the leaders who participated in these processes cannot always be explained logically and do not carry their economic, political, and other arguments. Conditionally, these are also social processes that have changed both their direction and their speed as a result of socially dominant leaders. Here we should make one important clarification, namely, that they took place too slowly, according to the current social processes. The factors of the external and internal environment have changed both in their essential characteristics and their quantitative dimensions. Some of the researchers would pay particular attention to the study of environmental factors that undoubtedly have and will continue to have an impact on ongoing social processes. Another question is to what extent they influence the decisions and behavior of the new socially dominant leaders. This can be established too late and only at the end of a certain stage of a certain social process. The tendency but socially dominant leaders who are empowered to make decisions and have sufficient resources (political, economic, financial, etc.) tend to make decisions of an operational nature in crises, in which decisions exclude consideration of the environment but rather represent motives other than political and economic logic. Usually, when a crisis occurs, the power tools focus on a small group of people who follow and have to bear the burden of decision-making in an extreme situation. In a cursory analysis of the social processes that are taking place in the world at the moment, one can make a relatively true conclusion that they are predominantly managed by the new socially dominant leaders. The use of the concept "the new socially dominant leaders" has a sacred convention, because the individuals we now define as dominant social leaders may have been leaders of states, corporations, unions, etc. in previous periods, but only now have acquired such importance. Undoubtedly, ongoing social processes are due to active changes in recent decades in political, economic, military, and financial aspects. The results of all this will be manifested to the greatest extent in the imposition of new social rules in the new social systems. The inevitability of imposing new regulatory functions in the structure of new social systems is almost obvious. Resistance to change is also evident. Evolutionary social processes currently dominate revolutionary social processes. Perhaps we should make a stipulation that these social processes are inevitably associated with local military conflicts, financial cataclysms, or political instability of certain regions, but not with a continental or worldwide presence of social discomfort. The imposition or the possibility of the establishment of a new social system with new rules cannot help but be accompanied by certain negative actions as well as consequences. Unfortunately, the scientific community will study, analyze, and predict all this too late. The utility of such an undertaking at a later stage of time will have its significance, but it will be far less than if it happened now. The importance of such action and research in this direction is of particular importance to each human individual as well as to different communities. Even if these studies mark little progress at the present stage, they must seek their place, serving as an element for the preparation of our societies for a new interaction in the new social environment. The understanding that everything should be left at the current level of preparedness could prove disastrous for some of our societies.

Moreover, there is sufficient reason to believe that some of the leaders of the smaller communities, or those who will not play a dominant role, will prove to be too unprepared, even unsuited to the new social situation.

5. DYSFUNCTIONS OF SOCIAL SYSTEMS

Social systems function according to certain rules and have their internal dependencies. Their main purpose is to serve the requirements of the participating individuals in these social systems. Tensions in social systems create an objective danger to their existence. This leads to significant discrepancies between the expectations and needs of those participating in social systems and their objective reality. All this can be caused by the new expectations or new needs that have arisen as a result of the social development of the systems, but it can also be a result of the internal tensions that have arisen in the systems themselves. These stresses can be classified in different ways and according to different criteria, but this is not the subject of the present analysis. Rather, it is important that the tensions in social systems that occur or are created by crises cause changes. These changes can be both desired and undesired. They will ensure the further existence or transformations of a social system. The impossibility of preserving their functioning in this form is more than obvious. Attempts to preserve them in this form will continue, but this is unlikely to be possible. The elites of the societies have raised new claims, which must be realized in some kind of social development, which will lead to serious transformations and changes in the social systems. The objective prerequisites for significant changes in social systems are present. New paradigms and new social claims are announced, numerous crises of different natures arise, as well as the fact that the leading social leaders create expectations for changes through their behavior. Social leaders in their communication in the social environment use the full range of means to impose their emerging desires. They do not always directly correspond with the wishes and expectations of those participating in a certain system. The environment in the social system becomes unstable and this further leads to the creation of future expectations of change. Objective scientific and research approaches provide only a small part of the answers for managing change in social systems, and they can even be misleading and even wrong in some cases. Social systems begin to obey the managerial views and specific decisions of social leaders who have a dominant influence. Historical retrospect provides some answers to these new expectations. They are not always related to the logic and correctness of the subsequent decisions, but rather to objectification in some reality of the strategic decisions of the dominant social leaders. Dominant social leaders begin to create social systems according to new rules and new requirements. If objectively possible, they try to transform them, or rather adapt them to their views, demands and intentions. In other extreme situations, they try to destroy them and recreate them. This version of the existence of social systems is the most critical from the point of view of the individuals participating in them, but sometimes the most pragmatic from the point of view of the dominant social leaders. Naturally, during the transformations or the creation of new social systems, various factors of the environment will have a significant and undetermined influence. They will be carriers of both progressive and regressive ideas. Support for both will change and gain different importance over time. It will be illusory to claim that the sustainability of the newly created or transforming systems will pass into an acceptable conditionality for all participants. The emergence of new demands and new conditions will put them to trials that they have not experienced at any other time in their human existence. Objectively, a larger part of the participants in the social systems will try to adapt to the new social conditions, but a significant part will find it impossible to do so. Here it is perhaps correct to divide them into two groups - those who have a complete or partial disagreement with the imposed new social rules and others who, due to their social nature, will be unsuitable for the new social conditions.

This mass of individuals, however, will be appreciably small to withstand the forward movement of social systems. Rather, change will only register the occurrence of such fluctuations, and new social systems will attempt to extinguish or ignore their existence.

6. SOCIAL TRANSFORMATIONS AND SOCIAL VALUES

The coming social transformations change the social environment, and this statement is unequivocal. The speed of their impact undoubtedly has an impact on the values of the individual and social groups.

From a scientific point of view, values represent the beliefs of an individual or or social group. In the context of categories, each value is part of the underlying value system that determines the actions or reactions of the individual. These values can be grouped into six categories:

- Ethical (good - bad, virtue - vice, moral - immoral - amoral, right - wrong, permissible - impermissible);
- Aesthetic (beautiful, ugly, unbalanced, pleasant);
- Doctrinal (political, ideological, religious or social convictions and beliefs);
- Innate (intrinsic to the biological species, such as reproduction and survival, controversial category);
- Unused/passive - includes values based on something never experienced or seen, or something bequeathed to the next generation;
- Potential/Possible - something that is believed to be valuable, for example a plant that may in the future prove to have medicinal properties;
- A value system is an organized and prioritized combination of values to which an individual adheres.

Value theory deals with the cost, utility, commercial or economic side, moral (virtue), legal, quantitative, or aesthetic characteristics of persons and things, or a combination of all of these. Scientific research shows that a person has a value system that is expressed in behavioral attitudes - a tendency to react in a certain way when certain conditions or stimuli are present that allow different reactions. The expression of this predisposition varies from very primitive behavioral actions to extremely complex reactions that would be very difficult to catch or decipher. There is no doubt that the social environment is in a period of dynamic and sharp changes, which determines both the behavior of individuals and social groups and forms changes in the value system. If we define all this as a social value system, we can observe and analyze these processes. A significant problem in sizing these processes is the social indicators and criteria we will use. At the current stage, research only registers the manifestations of individuals and social groups without being able to accurately and correctly analyze and predict the ongoing processes. Of course, attempts in this direction are made by various scientists and researchers, but rather their statements are based on expert assessments and not on analytical data.

6.1. The main types of social values

In general, social values strive for the just benefits of a specific social group with common characteristics. Therefore, they are guided by the core collective values that allow people to live in harmony and be morally accepted:

- Respect, one of the greatest social values Respect is a type of value that seeks to recognize differences between people and avoid discrimination, insult, or rejection. In this sense, you can help improve social relationships by accepting other people's opinions or actions without attacking or causing harm;

- Tolerance - this social value affects respect for people's practices and beliefs, even if they differ from personal ideals. Thus, it helps to recognize that there are similarities and differences between people that need to be accepted;
- Fairness - this type of social value influences people's decision-making because it constrains their behavior in a reasonable, fair, and honest way. Therefore, you can help improve interpersonal relationships by being transparent and unbiased in every decision you make;
- Responsibility - this social value affects the readiness of each person to respond or perform purposeful tasks. In this sense, it can help improve individual and group performance and satisfaction in a given environment.

7. CONCLUSION

The process of successive crises leads to the deepening of imbalances in social systems. The varying scale and intensity of the impacts on them put them through a series of cyclical trials. Establishing the scale of the changes that occur at the macro and micro levels is difficult to measure and the consequences are almost unpredictable. The standard toolkit of methods and approaches turns out to be insufficient to define and characterize all of this. The main factor is the speed of the processes and the lack of effective time for precise and objective analyses. This presents us as participants in transforming social systems with a set of challenges and tests of our fitness to be able to accept and adapt successfully to the changes that are occurring. The study of these processes requires a full-scale effort and different expertise. This is also imperative from the point of view of forecasting and planning the transformation processes and an effective solution for getting out of the critical state in which social systems fall. (Terziev, 2022a; 2022b; Terziev and Lyubcheva, 2022c; Terziev, 2022d; 2022e; Terziev and Solovev, 2022f; Terziev, 2022g; Terziev et al., 2022h; Terziev, 2022i; 2022j; 2023b; 2023c; Terziev and Georgiev, 2023d; 2023e; Terziev, 2024f; 2024g).

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LEGAL REGULATION OF CORPORATE PROTECTION OF LABOR RIGHTS - FROM SOFT LAW INSTRUMENTS, THROUGH NATIONAL LEGISLATION TO THE DUE DILIGENCE DIRECTIVE

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ABSTRACT

Numerous cases of violation of workers' rights in the chains of business activities of large corporations without an appropriate legal framework caused the emergence of various initiatives aimed at prescribing corporate obligations and responsibility. The first such initiatives came from international organizations through soft law instruments, the fundamental drawback of which in practice is their non-binding character. This was the reason why some member states of the European Union recently adopted special laws that legally regulated corporate obligations to protect human rights and the environment, or initiated procedures with the purpose of passing such laws. Although legally binding, these laws led to uneven legal solutions, and thus to the unequal position of corporations on the single European market. Therefore, the final step to avoid the aforementioned shortcomings of soft law instruments and national legislation should be the adoption of the announced Directive on due diligence for sustainable business. In this article, the authors present and analyze the most important solutions contained in soft law instruments and national laws, while pointing out their advantages and disadvantages. Finally, it is pointed out the Proposal of the Directive of the European Parliament and the Council on due diligence for sustainable business, the adoption of which would impose uniform binding rules on the member states of the European Union.

Keywords: corporate responsibility, value chain, due diligence, corporate labor rights, applicable law

1. INTRODUCTION

The primary interest of entrepreneurs is generally to increase profits and accumulate capital through surplus value. At a time when the capital cannot be increased in a satisfactory volume by new investments in the home countries, it is natural to look for new, more favorable markets outside the national borders. In this way, multinational (transnational, cross-border) corporations are created, which by their very nature are trading companies that, in order to obtain the greatest possible property benefits, operate in various, often numerous, countries around the world. According to the rough definition from the OECD Guidelines for Multinational Enterprises, it is about "trading companies or other business entities that operate in several countries and are connected in such a way that they can coordinate their activities in different ways." Although one of such entities, or several of them, may have a significant influence on the operations of other entities, the degree of their autonomy may differ significantly depending on the multinational company to which they belong".

Between the 50s and the 80s of the last century, international corporations experienced the widest expansion, which is why this period is often called the golden age of multinational corporations. Multinational corporations change and develop, so that today they encompass numerous types of business relationships and organizational forms. Due to the strategic alliances they make, and the increasing connection between corporations and their suppliers and subcontractors, in practice it is often difficult to clearly determine the boundaries of their business activities. In addition, multinational corporations often have budgets that are larger than the gross domestic product of individual countries, which opens up the possibility of strong influence on local communities, but also on the world economy, because they often play an important role in international relations. There is no country in today's world where there are no multinational corporations, their subsidiaries, affiliates, or subsidiaries that own or control production, distribution, services, or other facilities outside their home countries. The modern global environment requires corporate management to apply new management methods in order to achieve and maintain a competitive advantage. All interest groups must have a common goal in order to achieve general satisfaction. Companies should no longer have the sole goal of making a profit, but sustainable development as a whole (Vinšalek Stipić, 2020). In parallel with the significant development and influence of multinational corporations, in their chain of business activities violations of fundamental human rights occurred more and more frequently without the existence of an appropriate international legal framework that could directly impose binding restrictions on them or hold them accountable for the violations committed. In addition to the lack of legal frameworks that would limit the business activities of multinational corporations, the question of which country has the authority and duty to regulate their business activities abroad is often raised. The attitude of multinationals towards the protection of human rights has attracted increasing attention in recent decades. Frequent violations of human rights in the business chain of activities of such corporations launched numerous initiatives aimed at regulating their responsibility in respect of human rights in more detail. According to a February 2019 study by the Directorate-General for Foreign Affairs of the European Union entitled "Access to legal remedies for victims of corporate human rights violations in third countries" commissioned by the Human Rights Committee of the European Parliament, 35 lawsuits filed in EU member states were identified for serious corporate violations of human rights in third countries. Attempts to address the protection of corporate human rights have resulted in various international initiatives in the domain of *soft law*. However, such instruments do not define the specific obligations of multinational corporations in the protection of human rights, the scope of these obligations, the public law body responsible for supervising their observance, nor do they mention specific sanctions, while their main drawback is that the legal rules contained in these instruments do not have legally binding force. Given that such a voluntary approach is not sufficient for the protection of human rights in multi-layered corporate activity chains, several European Union member states have recently passed laws on due diligence in corporate activity chains regarding the protection of corporate human rights and the environment. Although all these laws refer to existing international standards contained in soft law instruments, they differ from country to country and lead to different solutions, which leads to unequal conditions and insufficient legal certainty for business entities operating in the single market. In order to standardize such protection throughout the European Union, on February 23, 2022, the European Commission adopted a Proposal for a Directive of the European Parliament and the Council on due diligence for sustainable business and amending Directive (EU) 2019/1937. After submitting a series of amendments with numerous amendments that are the subject of negotiations between the Parliament, the Council of Ministers and the Commission, the adoption of the final text is expected during the current calendar year. The Due Diligence Directive should establish obligations for large trading companies to prevent negative effects on human rights and the environment in the entire chain of business activities,

the content of due diligence, the role of regulatory authorities, the method of supervision and sanctions. Given that the directive is binding in terms of the results achieved by it, with the national authorities being left to choose the form and method of implementation, its adoption is expected to unify the rights of the member states of the European Union regarding the obligation to apply due diligence to protect the rights of workers in the business chain of activities multinational corporations.

2. THE ROLE OF SOFT LAW INTERNATIONAL INSTRUMENTS ON THE PROTECTION OF HUMAN RIGHTS IN THE CORPORATE CHAIN OF BUSINESS ACTIVITIES

Aware of the need for more efficient regulation of the actions of multinational corporations at the international level, since the 1970s various international organizations have adopted a number of soft law international instruments aimed at regulating the business activities of multinational corporations. Soft law is a term that is not translated in legal literature, but the original English expression is used, it implies legal rules contained in instruments that do not have legally binding force, but may have some indirect legal effects. Five soft law instruments stand out, namely: OECD Guidelines for Multinational Enterprises from 1976, Tripartite Declaration of the International Labor Organization on Principles Relating to Multinational Enterprises and Social Policy from 1977, UN Global Compact from 2000. , the 2003 UN Rules on Human Rights Obligations of Transnational Corporations and Other Business Entities, and the 2011 UN Guiding Principles on Business and Human Rights. The initiatives of the United Nations in the adoption of regulatory instruments aimed at the behavior of international corporations have from the very beginning faced a marked political divergence between developed and developing countries. While developed countries insisted that the emphasis be on protecting the rights of transnational corporations in the receiving countries, which they justified by encouraging a stable investment climate, developing countries assessed the activities of international corporations on their national territory as a threat to their sovereignty (Muhvić, 2016: 835). Developed and developing countries did not agree in principle even on the legal nature of the future instrument. Thus, developed countries advocated for a legally non-binding instrument, while developing countries advocated the idea of legal obligation, either in the form of concluding an international treaty or by encouraging the creation of rules of general international customary law. In this sense, the initiatives of the Organization for Economic Cooperation and Development (OECD) and the International Labor Organization (ILO) proved to be more successful, since they did not have or avoided the problems faced by the United Nations. The Organization for Economic Cooperation and Development, as an organization of developed countries, did not have the problem of political confrontation with developing countries, while the International Labor Organization, in accordance with the focus of its activities, limited the content of the instrument to labor standards (Muhvić, 2016: 836).

2.1. OECD Guidelines for Multinational Enterprises

The OECD Guidelines for Multinational Enterprises on Responsible Business Conduct (the Guidelines) are recommendations made jointly by governments to multinational corporations to strengthen their contribution to sustainable development and eliminate the negative effects that business activities have on people, the planet and society. It is based on a single implementation mechanism consisting of National Focal Points for Responsible Business Conduct (NCPs)¹, established by governments to improve the effectiveness of the Guidelines (OECD, 2023).

¹ National Contact Points (NCPs) are agencies established by the governments of acceding countries, and serve to assist companies in taking appropriate measures for more effective implementation of the Guidelines, and as a platform for mediation and conciliation with the aim of solving certain practical problems.

The guidelines are part of the OECD Declaration on International Investments and Multinational Enterprises, and represent voluntary principles and standards of responsible business in accordance with applicable laws and internationally recognized standards. In essence, it is a question of joint recommendations of governments addressed to multinational corporations. Corporations decide whether to follow the Guidelines on a voluntary basis and are not legally required to follow them. Since their introduction in 1976, the Guidelines have been constantly updated to remain relevant to societal challenges and the changing circumstances of international business. The amendments to the Guidelines from 2011 elaborated in more detail the issues of human rights in the context of the operations of international corporations. The main drawback of the Guidelines is precisely their legally non-binding character, as well as the foreseen implementation mechanism through national contact points. Therefore, even if individual multinational corporations are found not to behave in accordance with the Guidelines, no means are provided to force them to comply with the Guidelines (Grković & Rusan Novokmet, 2021).

2.2. Tripartite Declaration of the International Labor Organization on Principles Relating to Multinational Enterprises and Social Policy

The Tripartite Declaration of the International Labor Organization on Principles Relating to Multinational Enterprises and Social Policy (Tripartite Declaration) was adopted in 1977, and amended and supplemented in 2000 and 2006. It provides guidance to multinational corporations, governments, and employers' and workers' organizations to promote positive social and labor outcomes for multinational corporations in areas such as employment, education, working and living conditions, and industrial relations (International Labor Organization, 2024). The tripartite declaration contains a recommendation to the mentioned addressees to comply with it on a voluntary basis, as a result of which it can be considered just one in a series of initiatives that show readiness for change, but without introducing any real regulation in the context of business and human rights protection (Grković & Rusan Novokmet, 2021: 98).

2.3. UN Global Compact from the 2000th

The UN Global Compact of 2000 is the world's largest initiative for sustainable development and corporate sustainability, with over 14,000 members in 162 countries and 69 local networks worldwide (HUP, 2024). As a special initiative of the Secretary General of the United Nations, it followed ten years after the failed attempt to adopt the UN Code of Conduct for Transnational Corporations from 1990, which represented the first attempt to regulate the activities of multinational corporations in the context of human rights protection at the global level. By signing the Global Agreement, corporations undertake to incorporate its ten fundamental principles into their operations and to promote socially responsible business in the areas of human rights, labor, the environment and the fight against corruption, which are based on internationally accepted UN declarations and conventions. Given that these ten universal principles are derived from the fundamental declarations and conventions of the UN, they are relevant and applicable throughout the world (UNGC, 2008). The global agreement represents a voluntary initiative under the auspices of the UN without specific provisions on the obligations of multinational corporations or corresponding implementing provisions. Therefore, it can hardly be considered a soft law instrument of international law in the narrower sense of the word, but rather it is intended more as a voluntary initiative aimed at international corporations to work on harmonizing their activities and strategies with ten broadly set principles in the field of respect for human rights, by participating in it. labor rights, environmental protection and corruption prevention, which is not legally binding (Roya & Angus, 2011).

2.4. UN Rules on the Responsibility of Transnational Corporations and Other Business Entities with Respect to Human Rights

The UN Rules on the Responsibility of Transnational Corporations and Other Business Entities with Respect to Human Rights (the Rules) were adopted on August 13, 2003 by the Subcommission for the Promotion and Protection of Human Rights, which was an auxiliary body of the then Human Rights Commission.² In a normative sense, the rules represented a more comprehensive initiative in the field of business and respect for human rights than any other international soft law instrument, and in this sense it surpasses the OECD Guidelines, the Tripartite Declaration of the International Labor Organization and the UN Global Compact (Weissbrodt & Kruger, 2003). The basic concept is for the state to be the primary bearer of obligations, and transnational corporations to be the secondary bearers of obligations in the field of international human rights protection. They provided for periodic monitoring and confirmation of their application, which would be carried out on transnational corporations by the United Nations and other international or state mechanisms established for that purpose, and transnational corporations were required to provide reparation to victims affected by non-compliance with the Rules. At the session held on April 20, 2004, the Commission for Human Rights refused to accept the Rules, with the explanation that it did not request their creation and that, as a draft proposal, they have no legal force (Dov Bachmann & Miretski, 2012, 19-20). Despite this, the Rules represented the most concrete shift to date in the discussions surrounding the obligations of multinational corporations regarding the protection of human rights.

2.5. UN Guiding Principles on Business and Human Rights

Finally rejecting the adoption of the Rule on the Human Rights Responsibilities of Transnational Corporations and Other Business Entities, the Commission on Human Rights requested on 20 April 2005 the Secretary-General of the United Nations to appoint a special representative on the issue of human rights and transnational corporations and other societies with the task of further study and clarification of the mentioned matter (Dov Bachmann & Miretski, 2012: 17). After intensive research and consultation, the Special Representative presented a regulatory framework entitled "Protect, Respect and Remedy: Business and Human Rights Framework" (Business Framework). The business framework is based on three pillars and contains the 31st principle, namely (UNOHCHR, 2011):

- pillar: duty of states to protect human rights from private actors, including corporations (principles 1-10)
- pillar: responsibility of corporations to respect human rights (principles 11-24)
- pillar: effective access to means to correct the injuries caused (principle 25-31)

The Guiding Principles do not impose new obligations on states, but recognize existing obligations that international law imposes on states to protect people from human rights violations committed by third parties, including business entities. Pillar I focuses on how states can take appropriate steps to prevent, investigate, punish and remedy business-related human rights violations through effective policies, legislation, regulations and judgments (Principle 1). Corporate responsibility for respecting human rights applies to all companies, regardless of their size, sector, operational context, ownership and structure (Principle 14). In Column II. the term "responsibility" is deliberately used instead of "duty" (as in Pillar I) to indicate that corporate responsibility to respect human rights is not in itself legally binding. The absence of national human rights laws or failure to enforce them does not limit the responsibility of corporations to respect human rights (Principle 11).

² The Human Rights Commission together with its Sub-Commission ceased to exist in 2006, with the establishment of the Human Rights Council, which took over its duties and powers.

The term "business relationships" is broadly defined to include all relationships a corporation has with its business partners, entities in its value chain, and any other non-governmental or governmental entity directly related to its business operations, products or services (Sherman, 2020). In order to fulfill its responsibility to respect human rights, a corporation should implement appropriate policies and processes (Principle 15), which include:

- a commitment to respect human rights at a high level, supported by policies at the operational level, training and incentives that include commitment throughout the organization (UNGP 16);
- application of due diligence in respect of human rights, through which the corporation assesses real and potential impacts on human rights resulting from its own activities and through business relationships (Principle 18), integrates the results of these assessments and takes measures to prevent or mitigating negative impacts (Principle 19), monitors the effectiveness of its efforts to address impacts on human rights (Principle 20) and is prepared to communicate results to affected stakeholders and the public (Principle 21);
- providing assistance or cooperation in processes to remedy human rights violations caused or contributed to by the corporation, which may include extrajudicial appeals mechanisms at the operational level (Principles 22, 29 and 31).

Column III. it applies to both states (as part of their duty to protect human rights) and corporations (as part of their responsibility to respect human rights). States have a primary obligation under international human rights rules to take appropriate steps to ensure that those affected by human rights violations in their territory and/or jurisdiction have access to an effective remedy, both judicial and extrajudicial (Principles 25 and 26). This should include reducing existing barriers to redress, providing effective out-of-court grievance mechanisms and considering access to grievance mechanisms that are not based on state institutions (Principles 26 to 28). As part of its responsibility to respect human rights, a corporation should actively participate in the elimination of human rights violations that it determines it has caused or contributed to (Principle 22). Furthermore, corporations should establish or participate in grievance mechanisms at the operational level to prevent and resolve complaints early before they lead to impacts on human rights. Such mechanisms can also be important for identifying certain problems or trends and preventing future problems (Principle 29.). In order to be effective, all extrajudicial appeals mechanisms should meet specific criteria: legitimacy, accessibility, predictability, fairness, transparency, compatibility of rights and based on engagement and dialogue (Principle 31). The Human Rights Council developed and adopted the Special Representative's Business and Human Rights Framework entitled UN Guiding Principles on Business and Human Rights: Implementation of the UN "Protect, Respect and Remedy" Framework (UN Guiding Principles) in to its resolution 17/4 of June 16, 2011 (UN UNOHCHR, 2011). The guiding principles of the UN represent the most widely accepted framework of obligations related to the protection of human rights and responsibilities that in this sense are burdened by states, and indirectly by corporations, adopted at the UN level. The reason for such wide acceptance lies precisely in the fact that this instrument does not impose direct obligations on corporations regarding the protection of human rights, but rather confirms and emphasizes the primary obligation of the state in this respect (Grković & Rusan Novokmet, 2021: 104). However, despite some progress, the UN Guiding Principles do not represent any concrete progress, but rather can be considered a continuation of decades-long debates in finding appropriate solutions that would establish the responsibility of multinational corporations for human rights violations in their operations.

3. NATIONAL LEGISLATION ON DUE DILIGENCE IN THE FIELD OF CORPORATE HUMAN RIGHTS PROTECTION

France, Germany and Norway have recently passed laws requiring large corporations to exercise due diligence regarding the protection of workers' rights and the environment in their chains of business activities. Similar laws are being prepared in the Netherlands, Austria, Great Britain and some other countries. The reasons for these legislative initiatives lie in the fact that a voluntary approach cannot be sufficient for poor working conditions and environmental protection in multi-level corporate activity chains. Although all these laws refer to existing international standards (UN Guiding Principles and OECD Standards), there are significant differences between them in terms of personal scope, substantive due diligence requirements, enforcement regimes and related obligations. **France** – was the first country in the world to oblige large corporations by national law to carry out due diligence in respect of human rights and environmental protection and publish a Due Diligence Plan every year. This was done by passing Law no. 2017-399 of March 27, 2017 on Corporate Due Diligence of Parent Companies and Companies Giving Instructions (Due Diligence Law)³, to ensure that corporations take the necessary measures to identify and prevent human rights and environmental violations in their business chains. According to Art. 1., The law applies to corporations whose headquarters are in France and which in the last two years have at least 5,000 employees in France (directly or employed by their subsidiaries) or 10,000 employees worldwide (directly or employed by their subsidiaries). Such corporations are required to create, publish and implement an attention plan that must contain appropriate measures to identify and prevent the risk of serious violations of human rights and fundamental freedoms, serious physical injuries, health risks and damage to the environment, which directly and indirectly result from their activities and business relations. Corporations are required to publicly announce control plans and reports on their implementation and include them in their annual report. In the event that the corporation does not comply with these legal provisions, any person who has a legal interest may file a lawsuit in the competent court. If the court finds that such a lawsuit is founded, it will order the company to fulfill its legal obligations within three months. If the company does not fulfill its obligations within the specified period, the court is authorized to order it to publish the plan. The court also decides whether the supervision plan is complete and whether it fulfills the corresponding obligations described in the Law. Art. 2 of the Act prescribes the responsibility of the company according to the provisions of Art. 1240 and 1241 of the French Civil Code in the event of damage that is due to the proper fulfillment of obligations from Art. 1. could have avoided. However, an aggravating circumstance for plaintiffs is that they bear the burden of proof, which means that they will have to prove the company's failure and the causal link between the failure and the damage they suffered. Given that the omission must result from the violation of the obligations specified in Art. 1., the company that implements the attention plan, respecting the binding content and quality of the plan, should not be liable, even if damage occurs (European Coalition for Corporate Justice, French Corporate Duty of Vigilance Law, 2017.) **Germany** – The Supply Chain Due Diligence Act (German Law on Corporate Due Diligence in Supply Chains), or simply the Supply Chain Due Diligence Act, which entered into force on January 1, 2023 (German: Lieferkettensorgfaltspflichtengesetz – LkSG), aims to improve human and labor rights in international supply chains by has become mandatory for larger trading companies to carry out due diligence in the chain of activities. It consists of 6 parts and a total of 24 articles.⁴

³ French: Loi No 2017-399 du 27 mars 2017 relative au devoir de vigilance des sociétés mères et des entreprises donneuses d'ordre (Loi de Vigilance)

⁴ Part I – General Provisions (Art. 1 and 2), II. part - Obligations of due care (Articles 3 to 10), III. part – Civil procedure (Art. 11), IV. Part - Supervision and enforcement of public authorities (Articles 12 to 21), Part V - Public procurement (Article 22), VI. Part – Monetary and administrative penalties (Articles 23 and 24).

The law was initially applied to German companies with at least 3,000 employees, and from 2024 to companies with at least 1,000 employees (Article 1, paragraph 1). The provisions of Art. Paragraphs 2 and 4 of the Law refer to internationally recognized conventions on human rights that require the conduct or prohibition of corporate actions in order to prevent the violation of protected human rights. In Art. 2. paragraph 5 prescribes the scope of the company's supply chain, establishing that it refers to all its activities in Germany and abroad, as well as the actions of direct and indirect suppliers. This means that companies' responsibility no longer ends at its door, but is applied along the entire supply chain (German Supply Chain Act). According to Art. 3 of the Act, the key elements of the duty of due care include the establishment of a risk management system to identify, prevent or minimize the risk of human rights violations and environmental damage. The provisions of Art. 4 to 10 of the Law specify in detail nine measures resulting from the duty of due care, namely:

- establishment of a risk management system (Article 4, paragraph 1)
- appointment of a responsible person or persons within the company (Art. 4, paragraph 3)
- conducting regular risk analyzes (Art. 5)
- publication of a statement on the policy (strategy) of human rights protection (Art. 6, paragraph 2)
- prescription of preventive measures in the field of business (Art. 6, paragraphs 1 and 3) and towards direct suppliers (Art. 6, paragraph 4)
- taking corrective actions (Art. 7, paragraphs 1 to 3)
- establishing an appeal procedure (Art. 8)
- implementation of due diligence obligations regarding risks with indirect suppliers (Art. 9)
- documentation (Art. 10, paragraph 1) and reporting on the fulfillment of the obligation of due care (Art. 10, paragraph 2)

The company is obliged to publicly publish the annual report on the fulfillment of obligations on its website no later than four months after the end of the business year. In that report, the company must explain:

- whether it has identified risks related to human rights and the environment or violations of obligations related to human rights or the environment, and if so, which ones
- what it did to fulfill its obligations of due care
- how it evaluates the effect and effectiveness of measures
- what conclusions does he draw from the assessment for future measures

Those authorized to initiate proceedings for the protection of rights are persons who are directly affected, and who can engage trade unions or non-governmental organizations as representatives in the proceedings (Art. 11). In addition to publishing it on its website, the company must submit the report in electronic form to the competent public authority at the latest four months after the end of the business year to which it relates (Art. 12). The competent authority is obliged to check the submitted report, and if it finds omissions or deficiencies, it will set a reasonable deadline in which the company must correct it and bring it into line with the Law (Art. 13). Furthermore, the competent authority is authorized to act towards the company ex officio or on the basis of the reasoned request of the applicant (Art. 14), and to take the necessary measures to detect, eliminate and prevent violations of obligations, which are detailed in Art. 15. At the same time, the competent authority has the right to inspect the company's premises, offices and business buildings, as well as documents and records from which it can be concluded whether the company fulfills the legal obligations of due diligence (Art. 16), whereby the company is obliged to act in accordance with his requirements (Art. 17 and 18).

The public authority has the obligation to report on its activities of monitoring and implementation of the Act once a year on its website. The reports state and explain all established violations and ordered measures to eliminate them, and evaluate the submitted annual reports of the companies on the fulfillment of obligations (Art. 22). The provisions of Art. 23 and 24 of the Act prescribe fines and administrative measures that can be imposed on companies that have been found to have violated legal obligations. **Norway** – The Norwegian Act on the Transparency of Companies in Relation to Human Rights-Based Work and Decent Working Conditions (Norwegian: Lov om vândstellers  ppenhet og arbeid med s ttningen manskenrettigheter og anstendige arbeidsverhod –  penhetsloven), or the Transparency Act for short, entered into force on July 1, 2022. It contains a total of 15 articles, and its purpose is to promote fundamental corporate human rights and dignified working conditions in connection with the production of goods and the provision of services, and provides the general public with access to information on how companies deal with negative impacts on fundamental human rights and dignified working conditions (Art. 1). It applies to larger trading companies that are Norwegian residents and that offer goods and services in Norway or outside Norway, and to larger foreign companies that offer goods and services in Norway and that are subject to taxation in Norway in accordance with internal Norwegian legislation (Art. 2.). In Art. 3 of the Act defines terms such as large trading companies, fundamental corporate human rights, decent working conditions, chain of business activities and business partners. Businesses are required to exercise due diligence in accordance with the OECD Guidelines for Multinational Enterprises. According to Art. 4 of the Act, the duty of due care includes the following measures:

- incorporate socially responsible business into the company's business policy
- identify and assess actual and potential negative impacts on fundamental human rights and decent working conditions that the company has caused or contributed to, or that are directly related to the company's operations, products or services via the supply chain or business partners
- to take appropriate measures to stop, prevent or mitigate harmful impacts on the priorities and assessment established in accordance with
- monitor the implementation and results of the measures taken
- communicate with affected stakeholders and rights holders regarding the resolution of negative impacts
- ensure remediation or cooperate in remediation

The obligation of due diligence is carried out regularly and in proportion to the size of the company, the nature of the company, the context of its operations, and the seriousness and probability of negative impacts on fundamental human rights and decent working conditions. Companies are required to publish a report on the implementation of due diligence activities on their website no later than June 30 of each year, or in case of significant changes in risk assessments, and may publish it as part of a report on corporate social responsibility in accordance with the provisions of the Accounting Act. That report, in accordance with Art. 5 of the Act, must contain:

- a general description of the company's structure, area of activity, guidelines and procedures for dealing with actual and potential adverse impacts on fundamental human rights and decent working conditions
- information about actual adverse impacts and significant risks of adverse impacts that the company determined by acting with due care
- information on measures that the company has implemented or plans to implement to stop actual adverse impacts or mitigate significant risks of adverse impacts, and the results or expected results of these measures

The provisions of Art. 6 and 7 of the Act refer to the right of access to information of every interested person about how the company resolves actual and potential adverse impacts, and the manner and deadlines in which the company is obliged to provide the requested information. Articles 9 to 12 define the competent body of public authority authorized to supervise the implementation of the Act, the manner of acting ex officio and upon request, and the duty of cooperation of companies with that body in the implementation of its legal powers is prescribed. Finally, the provisions of Art. 13 and 14 prescribe sanctions for violation of legal provisions.

4. COURT JURISDICTION AND GOVERNING LAW

Commercial companies, especially large ones from the member states of the European Union, operate in a complex economic environment connected with millions of workers worldwide in their business chain of activities. There are numerous examples from practice that indicate that such trading companies can cause or be participants in the violation of workers' rights, especially in third countries. Therefore, the issue of jurisdiction, recognition and enforcement of court decisions made in the member state and application of the applicable law appears as an important issue in establishing legal certainty in the realization of the protection of workers' rights. These issues are determined in European law by special regulations, as legally binding acts of secondary legislation of the European Union, which are applied directly and in their entirety in the EU member states.

4.1. Jurisdiction, recognition and enforcement of court decisions

Certain differences that exist between the national rules governing jurisdiction and the recognition of judgments caused the need to adopt uniform rules on the conflict of jurisdiction, and to ensure quick and simple recognition and enforcement of court decisions made in a member state. Regulation no. 1215/2012 of the European Parliament and the Council of December 12, 2012 on jurisdiction, recognition and enforcement of court decisions in civil and commercial matters (Brussels I bis Regulation) enables the rules governing jurisdiction and recognition and enforcement of court decisions to be regulated by a legal instrument of the European Union which is binding and directly applicable (Official Journal of the European Union, L 351/1, 20 December 2012; Official Journal of the EU, especially Chapter 19, Volume 11. This Regulation replaced Council Regulation (EC) no. 44/2001 of December 22, 2000 on Jurisdiction, Recognition and Enforcement of Judgments in Civil and Commercial Matters, which replaced the earlier Brussels Convention on Jurisdiction, Recognition and Enforcement of Judgments in Civil and Commercial Matters from 1968.). The field of application of this Regulation refers to defendants based in the European Union, which is why it also refers to the protection of the rights of workers in the value chain of such companies in other member states and third countries. In terms of the provisions of Art. 63, paragraph 1 of the Regulation, a trading company or other legal entity or an association of natural or legal entities is domiciled in the place where it has its: statutory seat, the central administration or the main place of business. According to the basic rule contained in Art. 4, paragraph 1 of the Regulation, persons domiciled in a member state are sued before the courts of that member state. However, under the assumptions stated in Sections 2 to 7 of Chapter II. (Jurisdiction) of the Regulation, those persons may be sued before the courts of another member state (Art. 5).

4.2. Application of applicable law

Given the diversity of legal systems, it is extremely important to establish conflict norms, i.e. the rules by which the applicable law is determined in international private law with regard to the resolution of private law situations with an international character. Namely, the uncertainty surrounding the application of the relevant national law limits legal certainty regarding the legal regulations that are applied and thus makes it difficult to predict court decisions on the outcome

of litigation. Regulation no. 864/2007 of the European Parliament and the Council of July 11, 2007 on the law applicable to non-contractual obligations (Rome II Regulation) is the fundamental legal source governing the conflict of laws of non-contractual obligations (Official Journal of the European Union, L 199/40, 31 July 2007; Official Journal of the EU, especially Chapter 19, Volume 6.). This Regulation unified the conflict rules of non-contractual obligations within the European Union. It applies to non-contractual obligations in civil and commercial matters in cases involving conflict of laws (Art. 1). It includes every consequence arising from illegal conduct, unjustified enrichment, management without warrant or pre-contractual liability (Art. 2. paragraph 1.) and is also applied to non-contractual obligations that are likely to arise (Art. 2. paragraph 2.). The general rule of the delict statute is prescribed by the provision of Art. 4, paragraph 1 of the Rome II Regulation, according to which, unless otherwise prescribed by the Regulation, the law that applies to non-contractual obligations arising from illegal acts is the law of the country in which the damage occurs, regardless of the country in which the event occurred caused the resulting damage and regardless of the country or countries in which the indirect consequences of that event occur. So, in the case of the so-called distance torts in which illegal action in one state creates harmful consequences in another state, the law of the place of occurrence of the harmful consequence (*lex loci damni*) is applicable, not the law of the place of harmful action (*lex loci actus*). The place of occurrence of the harmful consequence is the place where the event (harmful action) that caused the damage took place causes negative consequences for the injured party, i.e. the place where actual material damage was caused to the injured party or where the injured party suffered an economic loss that can be compensated (Sajko, 2009). From the mentioned general rule on *lex loci damni*, the Rome II Regulation foresees two exceptions, namely:

- if the person who has been found liable and the person who suffered damage at the time of the damage have their habitual residence in the same country, the regulations of that country shall apply (Art. 4, paragraph 2)
- if it is clear from all the circumstances of the case that the illegal action is clearly more strongly connected with a country other than the *lex loci damni*, i.e. the right of common habitual residence, the regulations of that other country are applied. Obviously, a stronger connection with another state can be based especially on a pre-existing relationship between the parties, such as a contract, which is closely related to that illegal act (Art. 4, paragraph 3)

In accordance with the proclaimed freedom of choice of applicable law in Art. 14 of the Rome II Regulation, the parties can agree that for non-contractual obligations, the applicable law will be the one they choose: by an agreement concluded after the event that caused the damage or if both parties perform business activities, and by an agreement that the parties freely entered into before the event that caused the damage.

5. PROPOSAL FOR THE DUE DILIGENCE DIRECTIVE FOR SUSTAINABLE BUSINESS AND AMENDMENTS TO DIRECTIVE (EU) 2019/1937

Although recently adopted national laws and numerous initiatives for the adoption of such laws represent a step forward in protecting the rights of workers and the environment in their chains of business activities, in the absence of common rules, different national liability systems can lead to different outcomes and legal uncertainty. Therefore, on February 23, 2022, the European Commission adopted the Proposal for a Directive of the European Parliament and the Council on due diligence for sustainable business and amending Directive (EU) 2019/1937 with the aim of regulating the issue of corporate due diligence at the level of the European Union. The Due Diligence Directive will establish rules on the obligations of large companies with regard to actual and potential negative effects on human rights and the environment with regard to their

own operations and the operations of their branches, subsidiaries and business partners in the chain of business activities. The scope of application of the directive is determined, the obligations of corporations that do not respect the rules are clarified, various sanctions are defined in more detail, and the list of rights and prohibitions that the trading companies to which it refers to should be respected is supplemented. The scope of application of the directive is determined for large companies with more than 500 employees and a worldwide net turnover of more than EUR 150 million. For companies outside the EU, it will be applied if they achieve a net turnover of more than EUR 150 million in the EU within three years of the entry into force of the Directive. The Commission will have to publish a list of Companies outside the EU that are covered by the scope of the Directive. The commercial companies to which it refers should take appropriate measures that can achieve the objectives of due diligence by effectively dealing with negative effects, in a manner commensurate with the degree of seriousness and probability of the adverse impact. It should take into account the circumstances of the specific case, the nature and extent of the adverse impact and relevant risk factors, including, in preventing and minimizing the adverse effects, the specifics of the company's business and its chain of activities, the sector or geographic area in which its business partners operate, the company's power to affects its direct and indirect business partners and whether society can increase its power of influence (Council of the EU, Corporate sustainability due diligence: Council and Parliament strike deal to protect environment and human rights, December 14, 2023). Obligations for commercial companies are clarified and described in Annex I, which contains a list of special rights and prohibitions that negatively affect human rights when abused or violated. The list refers to international instruments that have been ratified by all member states and which establish sufficiently clear standards that companies can respect. The obligation to apply the standard of due diligence established by this Directive should include six steps defined by the OECD Guidelines, which according to Art. 16. includes the following measures:

- integration of due diligence into management policies and systems
- recognition and assessment of negative impacts on human rights and the environment
- preventing, stopping or minimizing actual and potential negative impacts on human rights and the environment
- monitoring and assessment of effectiveness of measures
- reporting
- ensuring remediation of negative impacts

The scope of the chain of activities of a trading company is prescribed in detail in Art. 18 and 19, and the trading companies referred to in the Directive in Art. 22. In order to ensure the effective implementation of national measures to implement this Directive, Member States should provide for dissuasive, proportionate and effective penalties for breaches of those measures. For such a penalty regime to be effective, penalties to be imposed by national supervisory authorities should include fines and a public announcement stating the company responsible and the nature of the offense if the company fails to comply with the decision imposing a fine within the applicable time frame (Article 54.). The supervision of competent national authorities would be carried out with a cooperation/coordination mechanism at the level of the European Union. This Directive will provide for a combination of sanctions and civil liability (Article 13). The entry into force of the Directive would supplement Directive (EU) 2022/2464 of the European Parliament and the Council of December 14, 2022 on the amendment of Regulation (EU) no. 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU regarding corporate sustainability reporting, which by itself failed to produce more far-reaching effects on the obligation to apply due diligence.

The aforementioned Directive replaced Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU with regard to the publication of non-financial information and information on the diversity of certain large companies and groups. The adoption of the final text with accepted proposals for amendments is expected during the current calendar year.

6. CONCLUSION

Despite the undoubted importance of the operations of multinational corporations for the international community and society as a whole, examples from practice show that these corporations can at the same time negatively affect the protection of human rights. The attempt to solve this problem through the adoption of a series of soft law international instruments did not prove to be a satisfactory answer related to the protection of human rights in the business chain of activities of multinational corporations. Due to their non-binding character, soft law instruments by their very nature must be sufficiently general and flexible in order to be acceptable to as many countries as possible and to be implemented in as many multinational corporations as possible. For this reason, they do not clearly define specific obligations in the field of corporate human rights protection, the scope of these obligations, the public legal body responsible for supervision, responsibility and the application of certain sanctions for committed violations. In order to better and more concretely protect corporate human rights, several European Union member states have recently adopted special laws regulating due diligence in the corporate business chain of activities related to the protection of human rights and the environment, or have launched initiatives to enact such laws. However, despite the intention of the legislators of the member states to bind the laws to existing international standards, such an approach leads to different requirements related to the scope of application, material requirements related to due diligence, the regime of enforcement, supervision and sanctions and the related duties of the administration. Although it is a more comprehensive and specific legally binding regulation of the business activities of large corporations, different legal arrangements in the single market lead to different requirements and unequal conditions of market competition in the single market. In order to ensure equal conditions for corporations operating in the single market, remove fragmentation and provide legal certainty, following the initiative of the European Parliament and the Council, the European Commission adopted on February 23, 2022 the Proposal for a Directive of the European Parliament and the Council on due diligence for sustainable business and amending the Directive (EU) 2019/1937. The adoption of the Directive should establish a unique and binding European framework for a responsible and sustainable approach in the global chains of business activities of multinational corporations in the field of corporate human rights protection in the European legal and economic area. Numerous amendments were proposed to the text of the proposal, which are an integral part of the negotiations of the Parliament, the Council of Ministers and the Commission. Regardless of the different views and conflicting interests of stakeholders, it is indisputable that the adoption of the Directive, which is expected in this calendar year, will finally establish a binding legal framework for corporations to conduct their business on the single market and under the same or similar conditions with the application of demanding due diligence in their own business chains contribute to the protection of corporate human rights. Although there is a fear that certain multinational corporations that have invested in third countries with weak protection of social and labor rights could withdraw from those countries because of this, the Directive should bring numerous benefits in the area of human rights protection, equal conditions of market competition and legal security.

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IMPACT OF INTELLECTUAL PROPERTY RIGHTS PROTECTION ON ECONOMIC GROWTH

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ABSTRACT

Intellectual property rights (IPRs) as determinants of innovative activity can play an important role in fostering economic growth. From the economic point, there is still an ongoing debate among scholars on the concrete impact of IPRs on economic growth. This paper aims to investigate and explain how intellectual property rights (IPR) protection, specifically patents as a form of IPR protection, can stimulate economic growth with a special focus on EU countries and the role of the R&D process. Besides the definition and elaboration of the relevant steps in the IPRs protection process, namely patent protection, the key factors such as patents and R&D expenditures from various sectors and their interconnection on economic growth in EU countries are analyzed and elaborated. Economic growth is observed through the comparison of analyzed variables with the increase, i.e. decrease of the GDP as the most general indicator of economic growth in a certain country. The research results demonstrate that there is a positive causality between R&D investments and patents on the economic growth of EU countries observed as GDP growth rate. The results of the conducted research will serve as a basis for future in-depth research on the topic with a focus on the EU developing countries.
Keywords: intellectual property rights (IPRs), R&D, economic growth

1. INTRODUCTION

Intellectual property rights (IPRs) play a significant role in fostering innovation, new product development, and technological change (Karanikic, 2020). IPR protection has a clear legal role in safeguarding any form of intangible asset created by an individual, organization, or company. Additionally, this form of legal protection has always been the subject of discussion among scholars due to its significant impact on economic growth and competitiveness. Measuring and monitoring the economic effects of IPR protection on overall economic growth and competitiveness is a demanding task that depends on the availability of relevant and accurate data. It is difficult to define and collect information and data on relevant indicators to measure and demonstrate the long-term economic effect of IPR protection on economic growth for a particular country. In addition, numerous economic, social, and cultural factors can impact the potential economic rationale for investments in IPR protection. European Union countries, as well as most developed countries, actively invest in IPR protection and develop IPR protection policies, especially patent protection, when it comes to new technologies. These countries have policies of strong and continuous investment in R&D of new technologies and emphasize that R&D is of exceptional importance in fostering innovation and economic growth. R&D investments are an important factor creation of new knowledge and technologies that can be further protected by an adequate form of IPRs (primarily by patents) and transformed into specific products and services (Bezic and Karanikic, 2014). Therefore, investing in R&D, despite its costs, is essential for economic growth.

This paper aims to determine and investigate the impact of IPRs, especially patents as the most effective form of IPR protection, and the importance of R&D investments and their positive impact on the economic growth in EU countries. Besides the theoretical presentation and overview of the main terms and concepts, the analysis part of the research is based on the available data at the World Intellectual Property Office (WIPO), the European Patent Office (EPO), and the Statistical Office of the European Union (Eurostat) databases. The paper is organized as follows. In the introduction part, the research topic is introduced and elaborated. In the second part of the paper, the intellectual property rights are defined and the IPRs protection process, especially patent protection, is explained. In the third part of the paper, the role of IPRs on economic growth is presented and elaborated based on the currently available literature. The fourth part of the paper analyses the impact of IPRs and the R&D process on economic growth with a focus on EU countries. The final part of the paper, the conclusion, summarizes relevant findings based on the literature review and conducted analysis and proposes the elements for future research on this topic.

2. INTELLECTUAL PROPERTY RIGHTS DEFINITION AND PROTECTION

IPRs in a broader sense are the rights that result from an individual creative and intellectual effort and fall into the scientific, literary, and artistic domains. They can take several forms such as copyrights, patents, trademarks, industrial design, and trade secrets. Depending on the specific forms of IPR protection various strategies for their protection can be developed and implemented (Karanikic, 2023). All forms of IPRs have in common three main principles: exclusivity, territoriality, and limited protection duration. The exclusivity principle refers to the fact that the IPR holder enjoys exclusivity over the concerned IP in a way that no one can use his IP in any manner without his consent. The territoriality principle refers to the fact that IP protection is valid only in the country where the IP rights are granted. The principle of limited protection duration refers to the limited duration of protection for all IP forms (e.g., 20 years of protection for patents) and it becomes a public good after the protection period expires (Abramac and Karanikic, 2023). Patents, as one of the IPR forms, have an important role in fostering economic growth through innovation, investment, and technological advancement. Inventions can be protected by patents through a structured process that involves several key steps and adherence to specific requirements. The requirements that an invention needs to meet are novelty, inventive step, and industrial applicability. The novelty requirement is a fundamental requirement for patent protection. It ensures that the invention seeking protection is new and has not been disclosed to the public before the patent application was filed. By promoting the disclosure of new and unique inventions, the novelty requirement encourages ongoing innovation and contributes to technological progress. The inventive step or non-obviousness requirement is essential in ensuring that patents are granted only for truly inventive contributions. It requires a thorough analysis of prior art and an understanding of the relevant technical field to determine whether the particular invention represents a significant technological advancement. This requirement ensures maintaining a balance between rewarding only genuine innovation and preventing patent protection for trivial improvements, thus fostering continued technological progress and competitiveness. The industrial applicability requirement ensures that inventions are practical and useful through specific, substantial, and credible industry implementation. This requirement ensures that patents are granted for inventions that can make a concrete tangible contribution to society, and contribute to economic growth. The patent protection process is a long-term, complex, and costly process. In exchange, for a protection for particular invention, the inventor must publicly disclose the information and data about the invention. Patent protection can be obtained in three different ways: through the national, regional, and international routes. The national route for patent protection involves applying for patent protection directly within the patent office of a specific

country where the protection is sought. Patent protection through the national route allows inventors to obtain protection in individual countries, tailored to specific markets or strategic needs. However, it can become costly and administratively burdensome if protection is sought in multiple countries since separate applications must be filed and maintained in each jurisdiction. The regional route for patent protection (e.g. European Patent Office – EPO) allows inventors to apply for a patent in multiple countries within a specific region through a single application process. This approach can be more efficient than filing individual national applications and by reducing administrative burdens and costs. The international route for patent protection is primarily facilitated through the Patent Cooperation Treaty (PCT), administered by the World Intellectual Property Organization (WIPO). The PCT process allows inventors to seek patent protection in multiple countries simultaneously with a single international application. This route is particularly advantageous for inventors seeking broad international protection and who want to minimize and defer the costs and administrative burden associated with multiple national filings¹ (WIPO, 2024). A patent is the main form of IPR protection when it comes to the protection of technological innovations resulting from R&D activities. The relationship between the patent protection system and R&D activities is complementary. A good patent protection strategy is impossible without the initial R&D activities while the motivation to invest in R&D activities arises, among others, from a strong IPR protection system. IPR protection system enables IP creators to protect their inventions and to gain a competitive advantage in the market by rewarding them for their innovative efforts and compensating them for the resources invested in R&D. Many countries are strengthening their IPR systems to encourage R&D, increasing innovation levels and achieve greater long-term economic growth and competitiveness. The effectiveness of the IPR protection system varies from country to country and depends on their level of development and capacity for innovation (Karanikic, 2023). Effective IPR protection systems contribute to a dynamic and competitive economy, driving technological progress and prosperity. It is a legal and regulatory framework designed to safeguard the rights of creators and inventors over their intellectual creations and innovations. This system ensures that individuals and organizations can control and benefit from the use of their intellectual property, thus promoting innovation, creativity, and economic growth.

3. THE ROLE OF IPRs PROTECTION ON ECONOMIC GROWTH

There are two economic objectives of the IPRs protection: to promote investments in knowledge and technology creation and business innovation through the exclusivity rights to use and sell the newly developed technologies and to promote the dissemination of new knowledge and technology by encouraging rightsholders to place their inventions on the market (Maskus, 2000). Intellectual property rights (IPR) play a crucial role in encouraging innovation, fostering technological progress, and stimulating economic growth (Barro and Sala-i-Martin, 2004). There is a continuous debate among scholars about the specific ways in which IPRs and their forms of protection contribute to the economic growth of a particular country. The impact of the IPR protection process on economic growth is complex and based on several factors. The efficiency of the IPR protection system largely depends on the specific circumstances in each country. The results of the existing research on this issue are still incomplete and somewhat contradictory, partly because many of the concepts covered are not easily measurable. In theory, stronger IPR protection systems can both increase and limit economic growth. Despite this, most of the currently available research results demonstrate that stronger and more effective protection of IPRs can have a positive effect on the economic growth and competitiveness of a particular country.

¹ The Patent Cooperation Treaty (PCT), available at: <https://www.wipo.int/pct/en/>

The strength of the IPRs protection system can have either a positive or negative impact on economic growth. Two studies have empirically examined this issue. Gould and Gruben (1996) linked economic growth rates in many countries to a simple index of patent strength and other variables. They found that there is no strong direct impact of patents on economic growth, but there is a significant positive effect when patents interact with a measure of international trade openness. The impact of stronger patent protection in open economies increases growth rates by an average of 0.66 percent, suggesting that market liberalization combined with stronger IPR protection systems boosts economic growth. Park and Ginarte (1997) studied how IPR protection affects economic growth and investment. They did not find a direct link between the strength of patent protection and economic growth, but they did identify a strong and positive impact of patent protection on investments and R&D, which in turn increases the effect on economic growth. While the global system of protection of intellectual property rights is strengthening due to the implementation of the Agreement on Trade-Related Aspects of Intellectual Property Rights - TRIPS concluded under the auspices of the World Trade Organization - WTO (World Trade Organization), many questions arise about its impact on economic growth. It is impossible to confidently state that this global system of IPR protection will stimulate economic growth for two main reasons. First, other factors affect economic growth and that can dominate the impact of IPR protection, and this primarily refers to the macroeconomic stability, market openness, policies to improve technological infrastructure, and human capital. Second, economic theory points out that IPR protection can have many positive and negative effects on the economic growth of a country. The importance of these effects will depend on the specific circumstances of each country (Karanikic, 2013). There has been a significant increase in the number of literary and empirical scientific papers in the past 20 years that address the management and enforcement of IPR protection. Kim et al. (2012), based on data from 70 countries, concluded that patent protection is an important innovation determinant and that patentable innovations contribute to the economic growth of developed countries. Bielig (2015) analyzed the impact of IPRs on Germany's GDP from 1999 to 2009 and concluded that patents, trademarks, and industrial designs have a positive impact on economic growth. Neves et al. (2021) conducted a meta-analysis of recent empirical studies focusing on the relationship between IPR protection, innovation, and economic growth. The authors found that the results of the studies were influenced by editorial bias, with a preference for publishing research showing higher statistical significance. After correcting for this type of bias, they discovered that IPR protection has a moderate effect on economic growth and innovation. The meta-analysis also revealed that the impact of IPR protection on innovation depends on the country's level of development. In more developed countries, companies are more aware of the importance of implementing IPR in innovative activities and consequently invest more funds. In contrast, developing countries tend to prefer imitating innovations over investing in innovative activities. Cho et al. (2015) state that the causal relationship between IPR protection, innovation, and economic growth is somewhat ambiguous, in both theory and the empirical literature. The complexity of the effects across countries, firms, and time is justified by the variety of approaches in the literature. For example, Ginarte and Park (1997) conclude that IPR are important for R&D activities in developed economies, but not in developing economies. Chen and Puttitanun (2005) find a positive impact of IPR on innovation in developing countries and a U-shaped relationship between IPR and economic growth. Falvey et al. (2006) show that stronger IPR protection induces faster growth in developed countries and can also have a positive impact on the growth rate of the poorest countries. Thus, the effects of IPR are not completely clear. According to the updated Frascati Manual (OECD, 2015), research and experimental development (R&D) comprise creative and systematic work undertaken to increase the stock of knowledge and to devise new applications of available knowledge. The results of an R&D process will result in new knowledge that can be translated

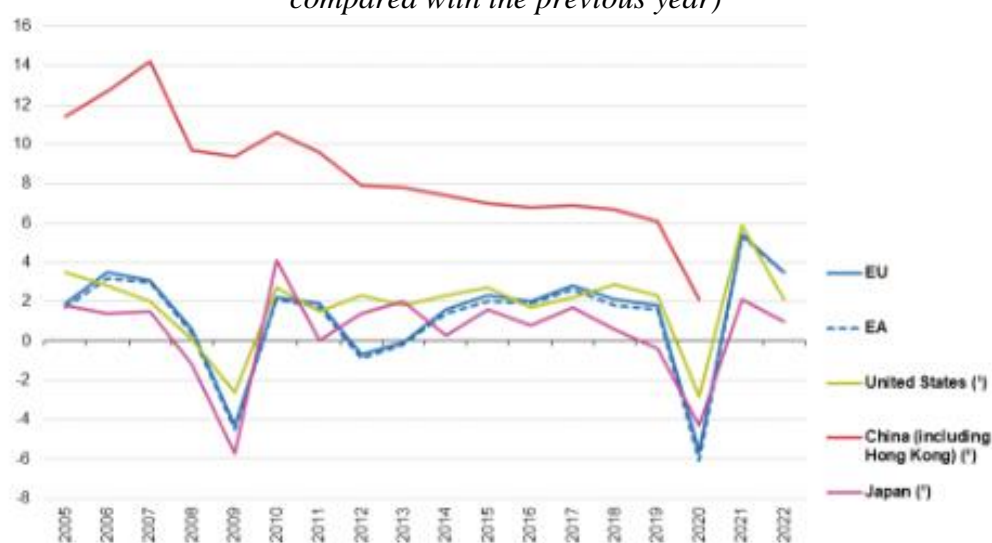
into new products and services that can be protected by a particular form of IPRs. Continuous R&D investments are not directly linked with exponential economic growth (Jones, 2019), and the increased investments in R&D alone are not a clear indicator of the particular country's innovativeness. Substantial financial resources may be invested in R&D, but there is a lack of creative ideas or long-term research vision to convert those investments into tangible new products, services, or technologies. Intellectual property rights protection strategies help the R&D sector optimize the resources invested (financial resources, time, infrastructure, human resources, technology, and others) in R&D activities. Existing theoretical and empirical research still does not provide a clear answer regarding the connection between IPR protection and economic growth, although most studies indicate a positive correlation. Some research shows that IPR protection stimulates economic growth through the creation of innovation. The results of empirical studies on this topic vary due to the large number of factors that, depending on the research approach, can be conflicting.

4. ANALYSIS

In the analysis of the economic growth of a particular country, many indicators can be used such as IPRs and R&D indicators (Bezic and Karanikic, 2014). The analysis in this paper aims to demonstrate if intellectual property rights (IPR) protection, specifically patents as a form of IPR protection, can stimulate economic growth with a focus on EU countries and the role of R&D in this process. Therefore, the analyzed indicators are the real GDP rate, number of granted patents, and R&D investments. The analysis was conducted at the EU countries level. The data used for this research are collected from the following relevant databases: the World Intellectual Property Office (WIPO), the European Patent Office (EPO), and the Statistical Office of the European Union (Eurostat) databases. In the analysis, economic growth is observed through the GDP as the most general indicator of economic growth in a certain country and comparison of relevant indicators in the context of the increase, i.e. decrease of the GDP. GDP is the total value of all goods and services produced in a country within a year and is an important indicator of the particular country's economic strength. The reference year in focus for the analysis is 2022. However, the trends in variable changes are also important for relevant discussion and conclusion. **Figure 1** presents the Real GDP rate in the EU in comparison with the real GDP rate of the US, China, and Japan.

Figure following on the next page

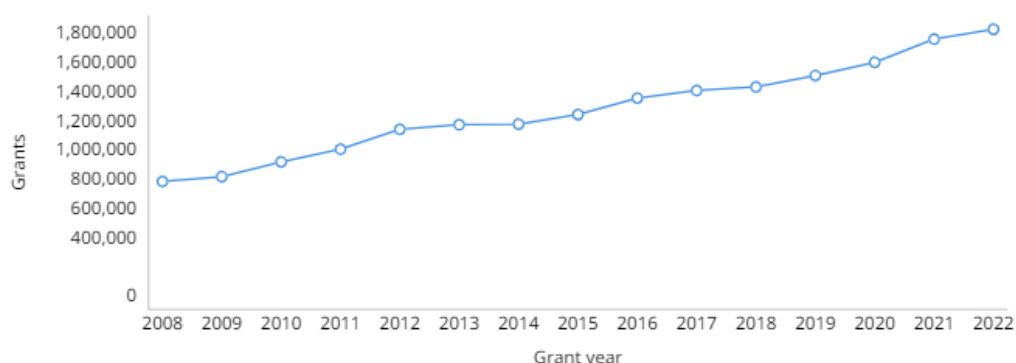
Figure 1: Real GDP change rate in the EU for the observing period 2005-2022 (% change compared with the previous year)



Source: Eurostat (2023)

There is a continuous and stable GDP growth rate in the EU with a significant decrease observed in 2008 and 2020. These years were marked by economic crises that influenced the decrease in economic activity worldwide and, therefore, in the EU. In 2022, GDP in the EU grew by 3,4% after the recovery from the COVID-19 pandemic crisis in 2020. In concrete amounts, in 2022 the overall GDP of the EU amounted to approximately EUR 15.9 trillion (Eurostat, 2023). Patents as one of the IPR forms reflect inventive activity and demonstrate the ability to exploit knowledge and turn it into potential economic gains. Indicators based on patent statistics are widely used to assess the countries' inventive performance. Therefore, patent statistics is used as one of the indicators of R&D results. In 2022, innovators worldwide filed 3.46 million patent applications, marking a 1.7% increase over 2021 which is the the highest number of patent filings ever recorded. Patent applications globally have risen for three consecutive years, with growth rates of 1.5% in 2020, 3.6% in 2021, and 1.7% in 2022 (WIPO, 2023). At the same time, the number of granted patents worldwide grew by 3.9% in 2022, reaching a total of 1.8 million as shown in **Figure 2**.

Figure 2. The number of granted patents worldwide in the observed period from 2008 to 2022

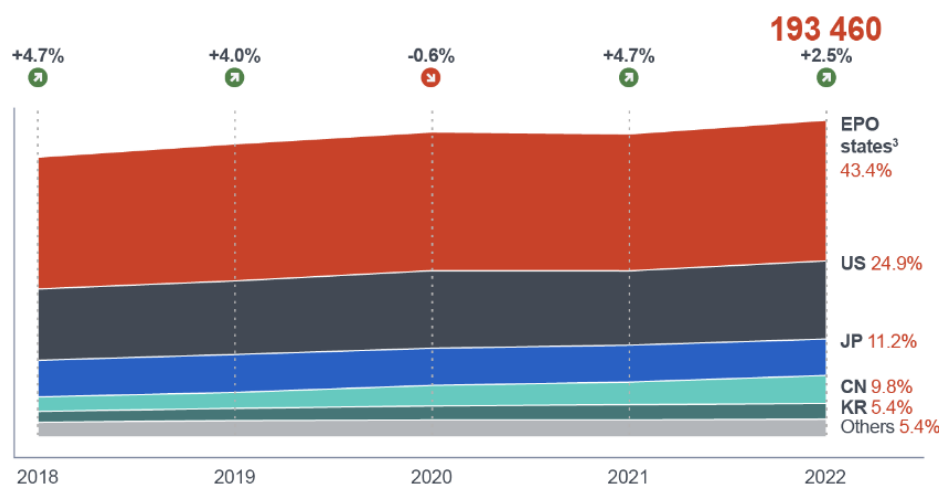


Source: WIPO (2023)

A similar situation is observed in the EU. In 2022, the European Patent Office (EPO) received a total of 193,460 patent applications which is an increase of 2.5% compared to 2021.

The number of patent applications mostly grew in the last five years except for 2020 when the decrease in the number of patent applications occurred which is visible in **Figure 3**. This can be explained as a result of the COVID-19 pandemic when most of the economic activities were lower. However, the number of granted patents was 81,754 in 2022 which is a decrease of 24,9% (EPO, 2023).

Figure 3. The number of patent applications at EPO in the observed period from 2018 to 2022



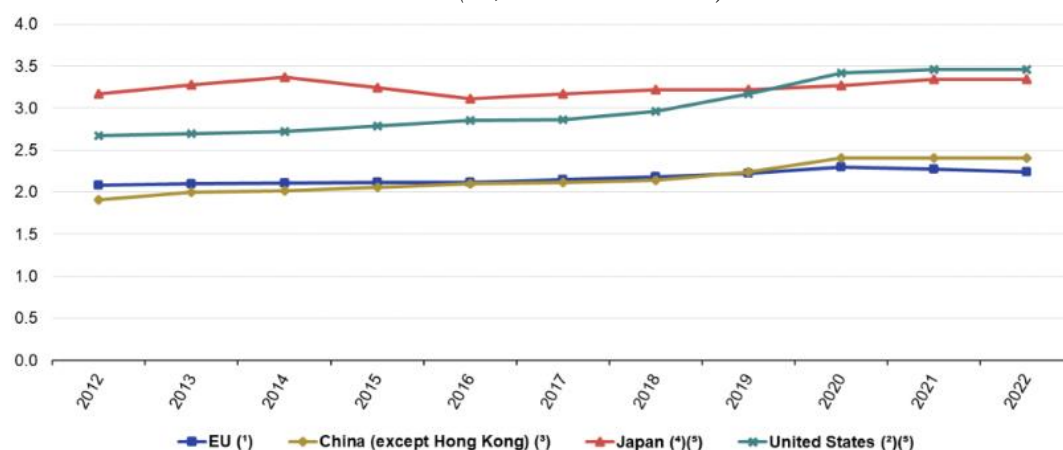
Source: EPO (2023)

One of the main goals of the EU over the last few decades has been to encourage R&D investments to boost the EU's economic competitiveness². Gross domestic expenditure on R&D (GERD) includes expenditure on research and development by business enterprises, higher education institutions, as well as government and private non-profit organizations. The R&D expenditures by sector in the EU are analyzed and discussed. According to the available data from the Statistical Office of the European Union (Eurostat), GERD in the observed period from 2000 to 2022 has grown by 7% and amounted to €355 billion which equated to an average of €794 of R&D expenditure per inhabitant. GERD can be expressed relative to GDP while the ratio of GERD to GDP is known as R&D intensity. This ratio grew modestly during the observed period from 2012 to 2022, rising from 2.08 % in 2012 to 2.30 % in 2020, and decreasing in 2022 to 2.23%. The negative ratio of R&D intensity between 2020 and 2022 can be observed as a result of the COVID-19 pandemic in 2020. Compared with the situation before the COVID crisis, GERD is now higher which is visible in **Figure 4** (Eurostat, 2023).

Figure following on the next page

² https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R%26D_expenditure&oldid=551418

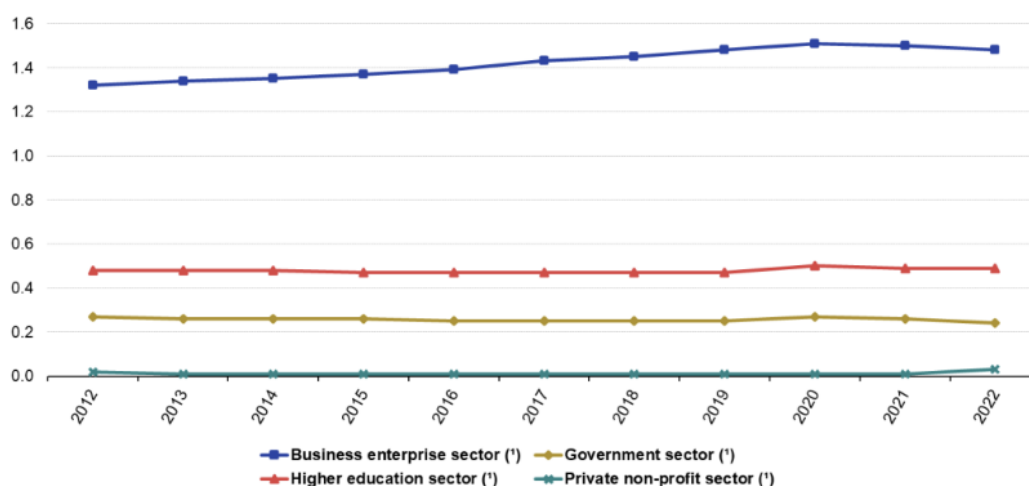
Figure 4. Gross domestic expenditure on R&D (GERD) in the observed period from 2012 to 2022 (% , relative to GDP)



Source: Eurostat (2023)

The EU's R&D intensity has changed between 2012 and 2022 in each of the four sectors of performance: the Business enterprise sector, the Government sector, the Higher education sector, and the Private non-profit sector as visible in **Figure 5**. The majority of R&D expenditure was performed in the business enterprise sector (1.48 % of GDP by 2022). The higher education sector was the second largest sector performing R&D with R&D intensity constantly stable between 2012 and 2022 (0.48% of GDP in 2022). Two other sectors, the government sector (0.24 % of GDP) and the private non-profit sector (0.03 % of GDP in 2022), had little changes in the R&D intensity in 2022.

Figure 5. Gross domestic expenditure on R&D in the EU by performance sector in the observed period from 2012 to 2022 (% , relative to GDP)



Source: Eurostat (2023)

There is a positive causality between investments in R&D activities and the number of patent applications. Since patent applications are considered as R&D activities outputs it can be concluded that the continuous growth in the number of patent applications is positively linked with the investments in R&D activities and R&D intensity in EU countries. This will consequently have a positive impact and lead to the economic growth of EU countries.

5. CONCLUSION

Intellectual property rights (IPRs) play an important role in fostering economic growth while IPR protection is crucial for innovation. IPRs are also considered as R&D process outputs. The importance of the R&D process for national economies is significant. However, there are still no unified views among scholars on the interaction and mechanisms between the R&D process and IPRs protection on economic growth even though both play an important role in the creation and generation of new knowledge. The results of the conducted analysis in this paper show that there is a positive causation between the R&D investments and the number of patent applications in EU countries which indicates that higher R&D investments will result in a higher number of patent applications and consequently economic growth. A large number of patent applications demonstrate the continuous and large investments into the R&D activity in EU countries that will result in the generation of new knowledge. In this sense IPR protection, especially patent protection, is important because of the benefits it provides for innovators on the global level and ensures the return on investments in R&D. Even though a certain number of patent applications will not be granted the knowledge generated will be an important input for future R&D activities. Both patents and R&D investments demonstrate a positive impact on the economic growth of EU countries which is visible from the causality of the overall R&D investments and number of patent applications with the GDP growth rate. Larger R&D intensity leads to an increased number of patent applications and, therefore, a GDP growth rate. The conducted research in this paper has certain limitations. The analysis was conducted on the overall EU countries' level and includes both developed and developing EU countries. Since both existing theoretical and empirical findings show that IPRs, namely patents, and R&D investments have a positive impact on the economic growth of developed countries and a limited impact on the economic growth of developing countries future research on this topic could be focused on developing EU countries. In addition, future research could include the particular provisions in the TRIPS Agreement related to IPR protection in developing countries.

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TEAM EFFECTIVENESS OF VIRTUAL AND FACE-TO-FACE STUDENT TEAMS: THE ROLE OF TEAM CONFLICT

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ABSTRACT

In contemporary organizational settings, teamwork is critical because teamwork is a highly valued skill. Consequently, students must develop teamwork abilities and acquire experience in collaborative work throughout their academic assignments. Team projects are frequently integrated into educational curricula, serving as platforms for students to enhance their teamwork proficiency and learn the dynamics of working together towards shared goals. The purpose of this research is to investigate the effectiveness of virtual and face-to-face student teams among first-year graduate students from the Faculty of Organization and Informatics (FOI) through a team project and the role of team conflict. We conducted the research through a survey questionnaire in the first semester of the 2022–2023 academic year, and a total of 76 students enrolled in the course Organizational Behavior represented the sample. The questionnaire comprises 33 elements, where items are divided into five categories/factors: contributing to the team's work (eight items); interacting with teammates (ten items); keeping the team on track (seven items); expecting quality (four items); and having relevant knowledge, skills, and abilities (four items). A total of 62 students completed the questionnaire. We found a difference in students' team effectiveness if there are conflicts in the team and no difference in team effectiveness if they work face-to-face or virtual. Our results indicate the role that conflicts can play in achieving team effectiveness and that people are increasingly taught to work in a virtual environment.

Keywords: *Teamwork, Team effectiveness, Team conflict, Face-to-face students' team project, Virtual students' team project*

1. INTRODUCTION

Trist and Bamford (1951) conducted pioneering research on teamwork by investigating how teamwork meets an organization's social, psychological, and technological requirements. Despite numerous studies, a universal definition of teams and teamwork still needs to be discovered. To grasp the concept of "teamwork", one must first understand what constitutes a "team." A team is defined by certain key characteristics: (1) they have a shared collective identity; (2) they have common goals; (3) they are interdependent in terms of the assigned tasks or results; (4) they have distinct roles within the team; and (5) they are part of a larger organizational context that impacts their work (Kozlowski & Ilgen, 2006). On the other hand, teamwork is a workgroup or unit with a common purpose through which members achieve goals/tasks (Harris & Harris, 1996). Furthermore, teamwork skills have been identified as one of most highly valued skills in the job market and most organizations feel that a candidate with good collaboration skills will also perform well in other areas (Crebert et al., 2004). Loughry et al. (2007) created the Comprehensive Assessment of Team Member Effectiveness (CATME), a theory-driven instrument to measure the efficacy of team members through a

rigorous approach. The authors identified 392 probable items from the literature and tested them on thousands of college students through questionnaires. The short version comprises 33 elements, divided into five categories: contributing to the team's work, interacting with teammates, keeping the team on track, expecting quality, and having relevant knowledge, skills, and abilities (Ohland et al., 2006). In this paper, we first present the theoretical background of the importance of team effectiveness in teaching business students. After that, we present virtual and face-to-face teams and the role of team conflict, based on which the research questions were formed. After the theoretical part, we present the research results on the effectiveness of teamwork skills in virtual and face-to-face teams and the role of team conflict among first-year graduate students from the Faculty of Organization and Informatics (FOI) through a team project. The paper concludes with the most significant research findings and implications for future studies.

2. THEORETICAL BACKGROUND AND RESEARCH QUESTIONS

Teaching business students to be effective team members should be a top priority. Business professionals increasingly work in a team environment (Cohen & Bailey, 1997; Gibson et al., 2000). Eighty percent of organizations with over 100 employees use teams to complete their work (Cohen & Bailey, 1997). Considering those facts, business students need exposure to the skills and experiences of working in a team. Group theories (McGrath, 1991) agree that conflict occurs naturally as the team strives for productive working relationships to accomplish an outcome. An intrateam conflict is defined as incompatible activities where team members, at least temporarily, interfere with and obstruct each other's behavior (Deutsch, 1973). Researchers have argued that team conflict outcomes can be positive or negative (Jehn, 1995; Kuhn & Poole, 2000; Tjosvold et al., 2003). Furthermore, some research has suggested that conflict can be an important antecedent to team effectiveness and studied how particular ways of handling conflict in teams influence team effectiveness (Van de Vliert & De Dreu, 1997). Much of this research has been inspired by Deutsch's Theory of Cooperation and Competition (1973), and literature reviews suggest that team effectiveness is enhanced when teams manage conflicts through collaboration. In contrast, team effectiveness suffers when teams manage conflicts through contending (Van de Vliert & De Dreu, 1997). In addition to suggesting the potential of conflict for team effectiveness, researchers have argued that it is not simply the presence of conflict but how people approach and manage their conflicts (Lovelace et al., 2001; Tschannen-Moran et al., 2000).

Considering these results in mind, we can formulate the following research question:

Q1: Does team effectiveness differ if the team has conflicts?

In the face-to-face team literature, the factors most frequently associated with student team satisfaction were high quality of communication (Ruiz & Adams, 2004; Werner & Lester, 2001), cooperation (Hansen, 2006), and clarity of goals and roles (Hansen, 2006; Ruiz & Adams, 2004). In previous studies, students highlighted challenges that led to negative team experiences, scheduling conflicts (Burdett, 2003; Jessup, 1995), and a lack of participation in group meetings (Hassanien, 2007; Napier & Johnson, 2007). A virtual team is a group of people who interact through interdependent tasks guided by a common purpose but work across space, time, and organizational boundaries with links strengthened by webs of communication technologies (Lipnack & Stamps, 1997). In virtual teams, student team satisfaction has been associated with open and effective communication (Ku et al., 2013; Lin et al., 2008). Furthermore, some research suggests negative effects of virtuality on several team effectiveness outcomes, such as lower decision accuracy, lower efficiency, less knowledge sharing, poorer perceptions of the team experience, and higher rates of intrateam disagreement (Baltes et al.,

2002; Dennis & Wixom, 2002; Fjermestad, 2004) with a few exceptions, like greater idea generation and greater participation equality (Fjermestad, 2004; Rains, 2005).

Considering these results in mind, we can formulate the following research question:

Q2: Does team effectiveness differ if teams have virtual or face-to-face settings?

3. METHODOLOGY

The questionnaire consisted of two parts. The first part contains questions about the respondents' demographic characteristics, team conflict, and virtuality. The second refers to questions related to evaluating the effectiveness of team members. The effectiveness of team members (Lau et al., 2014) was measured using 33 items in five categories (contributing to the team's work, interacting with teammates, keeping the team on track, expecting quality, and having relevant knowledge, skills, and abilities). The questions were adapted from the short version of the CATME (Loughry et al., 2007). The questionnaire used a five-point Likert-type scale to evaluate the statements, with the number 1 being the equivalent of strongly disagreeing with the statement and the number 5 being the equivalent of strongly agreeing with the statement. A total of 76 students from the Master Economics of Entrepreneurship study program at the Faculty of Organization and Informatics (FOI) participated in the data collection process. This study was conducted in the first (winter) semester of the 2022–2023 academic year, and 76 students enrolled in the course Organizational Behavior represented the sample. The course Organizational Behavior aims to familiarize students with the impact individuals, groups, and structure have on organizational behavior and to apply such knowledge to improve an organization's effectiveness. The team project in the course Organizational Behavior belongs to the prior learning and assessment activity, in which students assigned to the team by the teacher carry out the process of analyzing a specific organization and designing a new organizational solution. In this study program, the class (76 students) was divided into 12 teams; on average, there were six members in a team, and some teams had seven team members. Students prepared team projects throughout the semester and were required to make an oral presentation of 15 minutes and submit team reports from 5,000 to 7,000 words by the end of the semester. Of the 76 students, 62 completed the questionnaire (9.68% are males, and 90.32% are females). Most participants were between 22 and 23 years old, although a few older students also enrolled in the study program later. Also, 25.81% of participants work face-to-face with their team members, and 74.19% work in virtual conditions. In the end, 22.58% of participants claimed that they had conflicts, and 77.42% claimed that they had non-conflicts in their teams. Table 1 shows an analysis of the main characteristics of the participants.

Characteristics	No. of participants	Percentage of participants
Male	6	9.68%
Female	56	90.32%
Face-to-face	16	25.81%
Virtual	46	74.19%
Conflict in team	14	22.58%
Non-conflict in team	48	77.42%

Table 1: Analysis of characteristics of participants

According to the procedure in the studies of Lau et al. (2014) and Pikl and Posarić (2023), the collected data were analyzed by descriptive statistics to compare the initial difference among the mean scores of five categories of team effectiveness and between the existence or non-existence of conflicts, as well as if teams work face-to-face or virtual. Further comparison between the mean scores of defining groups was undertaken by one-way ANOVA.

4. RESULTS AND DISCUSSION

The analysis of mean scores for all items in each category of team effectiveness showed that the mean score in Category 1 ranged from 4.35 to 4.87, in Category 2 from 3.56 to 4.73, in Category 3 from 3.76 to 4.42, in Category 4 from 4.55 to 4.90 and in Category 5 from 4.24 to 4.47. So, in Category 2: Interacting with teammates, we have the lowest mean scores, which indicate certain problems in the interaction between team members. The total mean scores for each category are shown in Table 2. The highest mean score is in Category 1: Contributing to the team's work (4.60), while the lowest is in Category 3: Keeping the team on track (4.17).

Category	Mean scores
Category 1: Contributing to the team's work	4.60
Category 2: Interacting with teammates	4.39
Category 3: Keeping the team on track	4.17
Category 4: Expecting quality	4.75
Category 5: Having relevant knowledge, skills, and abilities	4.33

Table 2: Mean scores for team effectiveness categories

To answer the first research question, we observed whether there is a statistically significant difference in team effectiveness if there are conflicts in the team. The results of the one-way ANOVA analysis showed that in Category 2: Interacting with teammates and Category 4: Expecting quality, there are statistically significant differences in team effectiveness if there are conflicts in the team ($p < 0.05$). These results indicate that conflicts can affect team effectiveness, as previous research shows (Van de Vliert & De Dreu, 1997).

Conflicts or non-conflicts						
		Sum of Squares	df	Mean Square	F	Sig.
Category 1: contributing to the team's work	Between Groups	.015	1	.015	.082	.775
	Within Groups	10.646	60	.177		
	Total	10.660	61			
Category 2: interacting with teammates	Between Groups	1.341	1	1.341	4.812	.032
	Within Groups	16.716	60	.279		
	Total	18.057	61			
Category 3: keeping the team on track	Between Groups	.273	1	.273	.692	.409
	Within Groups	23.641	60	.394		
	Total	23.914	61			
Category 4: expecting quality	Between Groups	.995	1	.995	8.602	.005
	Within Groups	6.941	60	.116		
	Total	7.936	61			
Category 5: having relevant knowledge, skills, and abilities	Between Groups	.151	1	.151	.489	.487
	Within Groups	18.547	60	.309		
	Total	18.699	61			

Table 3: Results of one-way ANOVA for existence or non-existence conflicts in the team

To answer the second research question, we examined whether there was a statistically significant difference in team effectiveness if the participants worked in face-to-face or virtual teams. The one-way ANOVA analysis results showed no statistically significant difference in any category of team effectiveness if the way the team works (face-to-face or virtual) is observed ($p > 0.05$). Although the results of previous research indicated differences in team effectiveness in face-to-face and virtual teams (Baltes et al., 2002; Dennis & Wixom, 2002), this was not determined in this research. Such results indicate that people are taught to work in a virtual environment in modern conditions. The COVID-19 pandemic certainly contributed to this, but information and communication technology development enables different ways of completing tasks.

Face-to-face or virtual teams						
		Sum of Squares	df	Mean Square	F	Sig.
Category 1: contributing to the team's work	Between Groups	.027	1	.027	.152	.698
	Within Groups	10.633	60	.177		
	Total	10.660	61			
Category 2: interacting with teammates	Between Groups	.115	1	.115	.384	.538
	Within Groups	17.942	60	.299		
	Total	18.057	61			
Category 3: keeping the team on track	Between Groups	.160	1	.160	.404	.527
	Within Groups	23.753	60	.396		
	Total	23.914	61			
Category 4: expecting quality	Between Groups	.174	1	.174	1.342	.251
	Within Groups	7.763	60	.129		
	Total	7.936	61			
Category 5: having relevant knowledge, skills, and abilities	Between Groups	.127	1	.127	.409	.525
	Within Groups	18.572	60	.310		
	Total	18.699	61			

Table 4: Results of one-way ANOVA for face-to-face or virtual team settings

5. CONCLUSION

In modern business conditions, teamwork is becoming one of the most important skills for employees. Therefore, great emphasis is placed on teamwork in economics study programs so that economics students understand the importance of teamwork as a skill and learn to work in a team environment. The results of our research show that the mean scores of five categories of students' team effectiveness (contributing to the team's work, interacting with teammates, keeping the team on track, expecting quality, and having relevant knowledge, skills, and abilities) are different, but at a satisfactory level. The results of our research also showed that the students should improve their knowledge, skills, and abilities in teamwork, as well as their competencies in keeping the team on track. Also, the results showed a difference in team effectiveness in the two categories if there were conflicts in the team.

On the other hand, the results showed no difference in team effectiveness if team members work face-to-face or virtual. The contribution of our work emphasizes how people in modern business conditions are taught to work in a virtual environment and how, thanks to globalization processes, a virtual environment is no longer foreign to anyone. As a rule, conflicts always have a negative effect on team effectiveness, which can be even more reflected in work in a virtual team, where it is more difficult to resolve potential disagreements. Therefore, emphasis should be placed on developing rules of conduct in the work of a virtual team to reduce conflicts that affect team effectiveness to the smallest possible extent. In interpreting the results of our study, we must pay attention to a few limitations and implications for future research. First, a limitation of the research may be that students self-evaluate their team effectiveness. That fact may lead to too much subjectivity in the results. So, teachers' assessments should be included in future research about students' team effectiveness. Second, the limitation of the research is that students of only one year of one study program and one faculty were selected for participation in our research, and there were only 62 participants. Future research should be conducted at different faculties and universities and different levels of study programs to compare the results. Regardless of certain research limitations, our research contributes to the scientific literature in the field of team effectiveness and suggests which categories of team effectiveness need to be improved. Also, managers must consider how conflicts affect team members' work and, therefore, must manage conflicts effectively.

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EUROPEAN APPROACHES TO THE DEVELOPMENT OF CONCEPTUAL FRAMEWORKS FOR ESG POLICY

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ABSTRACT

Currently, sustainable development has become a key topic for the global community, reflecting the awareness of the urgency of environmental issues, social justice, and the challenges of ensuring stable economic growth. Currently, the European Union is ahead of other jurisdictions in regulating the fundamentals of a policy of environmentally friendly, socially responsible, and high-quality corporate governance. The purpose of the article is to systematize key approaches to the development of conceptual frameworks for policies to support environmentally friendly, socially responsible, and high-quality corporate governance (ESG) at the level of the European Union. As a result, the key regulatory drivers in the field of ESG in the European Union are systematized, and the features of the modern taxonomy of green (sustainable) activities of EU companies are revealed. The key aspects of disclosure of non-financial information on accounting for ESG factors and sustainable development goals by EU companies and the main regulatory changes that occurred in 2023 within the framework of climate regulation at the EU level are identified.

Keywords: *sustainable development, ESG, socially global challenges, UN SDGs, European Union*

1. INTRODUCTION

In the context of the current crisis trends, which are caused by the COVID-19 pandemic and various geopolitical developments, effective management of global economic processes has become crucial for the sustainable development of both leading and developing nations. The changing environmental conditions and the resulting consequences of globalization are placing increasing pressure on governments, businesses, and development institutions around the world to adopt and implement certain regulations that will help reduce the negative impact of human activity on the environment and promote sustainable development (Silvestrov, 2023). The concept of sustainable development is a key idea in modern scientific and public discourse. Sustainable development in its modern sense refers to economic growth and development that satisfies the economic needs of current generations without depriving future generations of their ability to meet their needs (Tutak, 2020, Khudyakova, 2023). This concept is based on a balanced approach to the development of society, economy, and environment. On September 25th, 2015, the United Nations General Assembly, with the support of leaders from 193 countries, approved 17 goals and 169 targets for sustainable development, which are collectively known as the Sustainable Development Goals (SDGs). These goals represent the culmination of a long process aimed at strengthening the concept of sustainability. By examining the content of the 17 Sustainable Development Goals set by the United Nations, it is possible to conclude that environmental factors have a significant impact on achieving sustainable development. Eight of the 17 goals directly relate to environmental concerns. At the same time, there is an increasing demand for environmentally friendly practices (E), social responsibility (S), and high-quality corporate governance (G). These three aspects, collectively referred to as ESG (Environmental, Social, and Governance), have become an important economic trend in recent years and represent a set of principles that encompass environmental, social, and governance considerations (Sokolova, Teymurov, 2021).

The concept of ESG has become increasingly relevant as a means to promote sustainable development and ensure long-term success for businesses and organizations. It involves considering the environmental impact of operations, promoting social responsibility, and implementing effective governance structures and policies (Zhukova, 2021). Thus the aim of this study is to systematically analyze and identify key approaches to developing policy frameworks that promote environmentally friendly, socially responsible, and high-quality corporate governance practices at the European Union level.

2. TAXONOMY OF GREEN (SUSTAINABLE) ACTIVITIES OF EU COMPANIES

Currently, the European Union is one of the leading jurisdictions in the field of developing a policy framework for environmentally friendly, socially responsible and high-quality corporate governance. The Action Plan on Sustainable Financing adopted by the European Union in 2018 brought the European integration bloc to the forefront in developing principles of global policy in the field of sustainable development¹. The key issue in this context was how to make investing in environmental, social and management projects more transparent, while at the same time improving socially responsible disclosure of information. This led to the adoption in 2019 of the Sustainable Finance Disclosure Regulation, and in 2021 of the European Union Regulation on Disclosure of Information on Sustainable Financing, developed in compliance with the Regulation². The common environmental-oriented consolidating policy vector of the EU countries has been called the "European Green Deal"³, the main goal of which is to make Europe "climate neutral" (to reduce the amount of CO₂ emissions in the European Union to zero by 2050).

2.1. Disclosure of non-financial information on accounting for ESG factors and Sustainable Development Goals by EU companies

Currently, there is no single international standard for non-financial reporting on accounting for ESG factors and sustainable development goals (as well as a single methodology for evaluating companies according to ESG criteria). More than 400 different agencies and rating companies present their own assessment of compliance with the ESG principles in accordance with the developed methods. In June 2023, the Council for International Standards of Reporting in the Field of Sustainable Development officially published the first two standards related to the disclosure of ESG information. They are based on the developments of the Climate Disclosure Standards Board (CDSB⁴) and the Task Force for Climate-related Financial Disclosures (TCFD⁵). These standards will gradually be consolidated as mandatory at the level of individual countries (primarily in the G7 countries). The European Union is actively developing legislation in the area of sustainable development and environmental, social, and governance issues. Companies need to prepare for an increasing number of reporting requirements set out in two key EU acts: the Corporate Sustainability Reporting Directive (CSRD) and the Financial Disclosure Regulation in the Field of Sustainable Development (SFDR). The CSRD is part of the EU's "Green Deal" and requires companies to report on environmental, social, human rights, and anti-corruption issues.

¹ Sustainable Finance: High-Level Conference Kicks EU's Strategy for Greener and Cleaner Economy into High Gear // European Commission: official site. – URL: http://europa.eu/rapid/press-release_IP-18-2381_en.htm?locale=en (accessed 14.05.2024).

² Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector // European Union Law: official site. – URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019R2088> (accessed 17.05.2024).

³ The European Green Deal // European Commission: official site. – URL: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en (accessed 17.05.2024).

⁴ Climate Disclosure Standards Board: official site. – URL: <https://www.cdsb.net/resources> (accessed 17.05.2024).

⁵ Task Force on Climate-related Financial Disclosures: official site. – URL: <https://www.fsb-tcfd.org> (accessed 17.05.2024).

The SFDR focuses on financial disclosures related to sustainable development. In particular, the CSRD requires companies to disclose information on:

- 1) Environmental impacts, including greenhouse gas emissions and resource use.
- 2) Social aspects, such as working conditions, diversity, and employee engagement.
- 3) Human rights considerations, including respect for international labor standards.
- 4) Anti-corruption measures and prevention of bribery.

Companies must ensure compliance with these requirements to maintain transparency and accountability in their operations and contribute to a more sustainable future⁶.

2.1.1. Regulation of trade in carbon units

Let us consider the regulatory changes that took place in 2023 in the context of climate regulation at the European Union level. These included, in particular, the reform of the emissions trading system (European Union Emissions Trading Scheme, EU ETS⁷) and the adoption of the Regulation on the Cross-Border Mechanism for Controlling Carbon Emissions in spring 2023 (the Carbon Border Adjustment Mechanism⁸). These documents form part of the "Fit for 55" program⁹, which aims to reduce carbon dioxide (CO₂) emissions in the EU by at least 55% compared to 1990 levels by 2030 and to zero emissions by 2050. Following the adoption of these documents, eight existing regulations in the energy, transportation, and climate sectors were revised. The EU Emissions Trading System is a global emissions trading scheme that covers energy-intensive industries, electricity generation, and aviation. The system aims to reduce emissions by 62% below 2005 levels by 2030, surpassing the previous target of 43%. This new target is more ambitious and represents a significant step towards achieving climate goals. We would like to draw your attention to the fact that the price of CO₂ has dropped to a two-and-a-half-year low. As of February 2024, one ton of CO₂ is trading below €56.5, which is the last time such a price was recorded in October 2021. At the same time, the total volume of trading on the EU Emissions Trading System, the world's largest carbon market, has increased by 2% to €770 billion by the end of 2023. A year ago, at its peak, a ton of carbon dioxide traded in the European Union was more than €100. However, the price has almost halved due to low demand from industry and energy companies. This may indicate a slowdown in economic growth in the European Union and a continuation of this trend in the near future, as demand from many sectors covered by the EU ETS is expected to decrease. Despite this, the overall trend is one of increasing trading on carbon markets, with their total volume increasing to a record high of €881 billion in 2023, an increase of 2% compared to 2022. In order to support European manufacturers who find themselves in more challenging competitive circumstances due to the EU ETS, a border carbon adjustment mechanism has been implemented¹⁰. This mechanism aims to prevent the leakage of greenhouse gas emissions: the relocation of production by EU-based companies to countries with less ambitious climate policies than the European Union to combat climate change.

⁶ Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting // European Union Law: official site. – URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A32022L2464> (accessed: 15.05.2024).

⁷ EU Emissions Trading System // European Commission: official site. – URL: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en (accessed: 15.05.2024).

⁸ Carbon Border Adjustment Mechanism // European Commission: official site. – URL: https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en (accessed: 16.05.2024).

⁹ "Fit for 55" // European Council: official site. – URL: <https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/> (accessed: 16.05.2024).

¹⁰ Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism (Text with EEA relevance) // European Union Law: official site. – URL: <https://eur-lex.europa.eu/eli/reg/2023/956/oj> (accessed: 16.05.2024).

It is hoped that the reduction targets for carbon emissions in Europe will contribute to reducing global emissions, rather than displacing high-emitting industries to other countries. Separately, we would like to emphasize that the European Union's efforts to decarbonize its economy over the past two decades have led to a reduction in emissions in neighboring countries. The EU has played a catalytic role in facilitating the transition to decarbonization in these countries through various channels, including economic, financial, and technological means. Over the period 2000-2020, the EU's environmental policies have resulted in a 10-20% decrease in emissions in its neighboring countries. This reduction is consistent with the International Monetary Fund's assessment that, after the full implementation of the planned climate change measures in 2026, the exports of emission-intensive industries in certain neighboring countries, such as North Macedonia and Serbia, may be significantly impacted¹¹. In the long run, the implementation of tighter border carbon pricing measures may also have an impact on the competitiveness of neighboring countries to the EU, given their level of trade integration. This will necessitate a tightening of national policies aimed at reducing CO₂ emissions. Establishing an appropriate price for carbon dioxide is the most effective and equitable policy response to the challenge of decarbonizing neighboring countries within the European Union.

2.1.2. Regulation of the disclosure of information regarding the consideration of environmental, social, and governance factors

In addition to the regulatory changes previously discussed in the area of requirements for environmental, social, and quality corporate governance, European lawmakers in July 2023 finalized a number of legislative measures that were part of the legislative package "Fit for 55"¹². During this same period, the European Commission also announced the approval of the European Sustainability Reporting Standards ("ESRS") for use by all organizations subject to the Corporate Sustainability Reporting Directive. These standards cover a comprehensive range of ESG topics, including shifting environmental conditions, biodiversity, and human rights issues. The ESRS are grounded in the concept of "dual materiality", which means they require companies to report on both their impacts on people and the planet, as well as how social and environmental issues create financial risks and opportunities for the organization. Therefore, there is a significant level of consistency between European and international standards. However, there are also some differences that are determined by the intended audience for disclosure. Companies that are required to report under ESRS on environmental changes will generally report the same information as those that use the ISSB standard for disclosing information related to environmental aspects (e.g., the IFRS S2 standard). The disclosure of information on changing environmental conditions under ESRS provides additional information relevant to stakeholders other than investors (such as business partners, trade unions, scientific representatives, and others). The ESRS contain current standards covering a wide range of environmental, social, and management issues. In contrast, ISSB standards focus more on how social and environmental factors create financial risks or opportunities for companies. At the same time, the European Commission has ignored widespread criticism of the project, primarily related to the weakening of the final version of the ESRS when compared to the draft developed by the European Financial Reporting Advisory Group that was authorized to create it. With regard to cross-country variations, it should be noted that, unlike in the United Kingdom, United States, and European Union, countries in the Asia-Pacific region lack a unified regulatory body for establishing legislation in the area of ESG and information disclosure.

¹¹ Climate Change Mitigation and Policy Spillovers in the EU's Immediate Neighborhood // IMF: official site. –URL: <https://www.imf.org/en/Publications/WP/Issues/2023/11/30/Climate-Change-Mitigation-and-Policy-Spillovers-in-the-EUs-Immediate-Neighborhood-541902> (accessed: 17.05.2024).

¹² Fit for 55 laws to decarbonize the EU's economy // European Council: official site. – URL: <https://www.consilium.europa.eu/en/press/news/fitfor55-adoptions/> (accessed: 16.05.2024).

As a result, ESG legislation in Asia-Pacific countries is quite diverse and varies from country to country, making it challenging to establish a unified approach. However, in light of the increasing demand for greater transparency regarding "sustainable" products, services, and practices, there has been a significant increase in efforts to develop a unified ESG strategy in these regions. For instance, regulations for ESG funds have been implemented by Hong Kong, Malaysia, Taiwan, Australia, India, Japan, New Zealand, Singapore, and Thailand, as well as the Association of Southeast Asian Nations (ASEAN). Simultaneously, within the Asia-Pacific region, China, Hong Kong, and Singapore are regarded as the most progressive with respect to adopting regulations and standards in the area of ESG. Consequently, the Monetary Authority of Singapore has implemented disclosure and reporting requirements for ESG funds that are effective from January 2023 in order to mitigate the risk of "greenwashing"¹³. These guidelines necessitate continuous disclosure of information regarding ESG-labeled funds, including the investment strategy, selection criteria, and indicators, as well as any identified risks. In December 2022, the Singapore Exchange (SGX) released a consultation paper detailing 27 environmental, social, and governance (ESG) indicators for companies listed on its exchange. The SGX announced that starting in 2023, ESG reporting will be mandatory for companies in financial, energy, agricultural, food, and processing sectors, as well as those operating in transportation and logistics, beginning in 2024. Additionally, in November 2021, the Hong Kong Exchange (HKEX) released a Climate Disclosure Guidance to comply with the requirements of the aforementioned Climate-Related Financial Disclosure (TCFD)¹⁴. At the same time, the complex nature of legislation in the Asia-Pacific region is further compounded by the various taxonomies related to ESG. The Association of Southeast Asian Nations (ASEAN) has therefore developed the ASEAN Taxonomy for Sustainable Finance in order to establish common standards for sustainable economic activities and financial instruments¹⁵. Despite this, the Monetary Authority of Singapore has expressed support for the green and transition taxonomies being developed by the Green Finance Industry Task Force (GFIT) in Singapore's financial sector. In 2023, the Indian government also announced its intention to develop its own taxonomy for classifying sustainable economic activities and technologies. As a result, there is an increasing number of ESG disclosure requirements, which may put pressure on internationally recognized standards such as those proposed by the International Council for Sustainable Development Standards (ISSB). To summarize, these aspects confirm the hypothesis that the level of consistency in ESG legislation in European countries is significantly higher than that in Asian countries. Based on the analysis conducted in this study, the key regulatory factors have been identified and categorized in terms of creating a framework for a policy on environmentally friendly, socially responsible, and high-quality corporate governance in the European Union (Table 1).

Table following on the next page

¹³ CFC 02/2022 Disclosure and Reporting Guidelines for Retail ESG Funds // Monetary Authority of Singapore: official cite. – URL: <https://www.mas.gov.sg/regulation/circulars/cfc-02-2022---disclosure-and-reporting-guidelines-for-retail-esg-funds> (accessed: 16.05.2024).

¹⁴ Guidance on Climate Disclosures // Hong Kong Stock Exchange: official cite. – URL: https://www.hkex.com.hk/-/media/HKEX-Market/Listing/Rules-and-Guidance/Environmental-Social-and-Governance/Exchanges-guidance-materials-on-ESG/guidance_climate_disclosures.pdf (accessed: 16.05.2024).

¹⁵ ASEAN Taxonomy for Sustainable Finance // ASEAN official cite. – URL: <https://asean.org/book/asean-taxonomy-for-sustainable-finance/> (accessed: 16.05.2024).

The year of adoption	Name of the document	The purpose of the adoption of the document	The main provisions of the document
2018	The European Union Sustainable Finance Action Plan	To make investments in environmental, social and management projects more transparent and improve information disclosure	The plan outlines three primary objectives: 1. Redirecting capital flows towards sustainable investments, and reducing the number of investments in sectors that contribute to global warming. 2. Managing financial risks associated with environmental changes, resource depletion, and environmental degradation. 3. Enhancing transparency and long-term viability of financial and economic activities to achieve sustainable and inclusive growth.
2019	European Green Deal	To create a roadmap for ensuring the sustainability of the EU's economy by transforming climate and environmental challenges into opportunities and making Europe "climate-neutral" by 2050	Global goals that can be accomplished through the adoption of this document include: Cleaner air, water, and soil through reduced environmental pollution. Improved food security. More liveable and environmentally-friendly cities. Reduced reliance on fossil fuels.
2019	Sustainable Finance Disclosure Regulation	To put the EU on a path toward a "green" economy, with the aim of achieving climate neutrality by 2050	The package contains initiatives addressing climate risks, energy, transportation, industry, agriculture, and sustainable finance
2020	The EU Taxonomy Regulation	To define criteria for economic activity that contribute to achieving a climate-neutral economy in the EU by 2050 (while reducing CO ₂ emissions by at least 55% by 2030 compared to the levels of the 1990s)	Key objectives of the regulations are: 1. Redirection of capital flows, with a focus on sustainable investments. 2. Ensuring sustainability as an integral part of risk management 3. Promoting long-term investment and economic activity
2021	EU Sustainable Finance Disclosure Regulation	Formulate specific guidelines for how and what type of information regarding sustainable development should be disclosed	The main objectives of the Regulation are: 1. Improving information disclosure to allow stakeholders to understand and compare sustainability characteristics of financial products and companies. 2. Creating a level playing field in the European Union to prevent unfair competition from non-EU companies. 3. Preventing "greenwashing"
2021	SFDR	To provide equal conditions for all financial market participants with respect to transparency regarding the risks associated with sustainable development, considering the impacts on investment decisions	Financial authorities should provide prescribed and standardized information on how ESG factors are integrated at both the company and product levels
2021	«Fit for 55»	To guide the European Union towards achieving its climate objectives in a fair, cost-efficient and competitive manner	The package includes a set of proposals to revise legislation related to climate, energy, and transport and introduce new legislative initiatives to align EU laws with climate goals
2021	EU strategy on adaptation to climate change	To present a long-term vision for the EU to become a climate resilient community fully adapted to the unavoidable consequences of climate change by 2050	The strategy aims to strengthen the resilience of the European Union and minimize its vulnerability to the impacts of climate change, in line with the objectives of the Paris Agreement and EU climate legislation, which underpins the goal set out in the "Green Deal"
2022	Corporate Sustainability Reporting Directive	To ensure transparency that will assist investors, analysts, customers, and other stakeholders in better assessing the sustainability performance of European businesses, as well as their business implications and associated risks	Reporting under this Directive is guided by the principle of "double materiality", requiring organizations to disclose information on how their operations affect the planet, its people, and how their sustainable development goals, activities, and risks impact the financial performance of their business
2023	ESRS	To enhance transparency and comparability in corporate reporting on sustainable development and ESG matters	The standards encompass a wide range of ESG issues, including climate change, biodiversity, and human rights. They form a crucial component of the EU's broader sustainable development agenda

*Table 1: Regulatory drivers in the ESG in the European Union
 (Source: compiled by the author)*

In summary, the author argues that the current regulatory approach of the European Union does not adequately align with the gradual transition away from fossil fuels in the decades to come and therefore needs to be revisited in order to meet the ambitious targets set out in key policy

documents. In order to address these imbalances, the European Commission has mandated EU member states to make adjustments to their national energy and climate plans (NECPs) by mid-2024, detailing how and through which measures they intend to achieve carbon neutrality. The European Commission emphasizes the importance of phasing out the use of fossil fuels in energy production, particularly solid fossil fuels. Additionally, the continued provision of fossil fuel subsidies in all member states of the EU, including in the transportation sector, may constitute a significant obstacle to achieving climate neutrality in the EU. We note that the share of renewable energy in gross final energy use in the EU reached 23% in 2023, an increase of 1.1 percentage points compared to 2022. At the same time, the revised EU directive on renewable energy targets has increased the EU target for renewable energy generation to 42.5% by 2030, up from 32%. In order to achieve this goal, EU countries must increase their efforts to increase the share of renewable energy in the gross energy consumption of Europe by almost 20 percentage points by 2030.

3. CONCLUSION

Over the past few decades, human society has learned from experience that sustainability goes beyond simply addressing environmental risks. There has been an increasing focus on sustainable development as a fundamental principle that connects the functioning of businesses and financial markets to the broader global agenda, as embodied in the United Nations Sustainable Development Goals. Regardless of whether the current changes in environmental conditions can be attributed to human activity (such as CO₂ emissions) or natural cycles, it is clear that the world's major economies are steering global development towards decarbonization. Despite these potential risks, however, processes of qualitative and advanced ESG transformation are underway both at the international and European levels. These processes contribute to the achievement of sustainable development goals and increase the competitiveness of certain companies. Overall, despite the challenges and imbalances previously mentioned, the EU's goal of achieving climate neutrality by 2050 is essential to ensuring sustainable development. The analysis conducted in this study has revealed that, within the context of European approaches, the concept of ESG has evolved from being a mere ideology for sustainable economic policy to the development of significant regulatory measures on a regional (and global) scale in the areas of macroeconomics, finance, investment, and energy. The increasing interest of investors indicates that this concept is not merely a fad, but rather a strategically significant element for ensuring the long-term sustainability of countries in the European continent. It has also been concluded that ESG regulations in countries of the Asia-Pacific region are more fragmented, with a lower degree of uniformity compared to those in European nations. This finding emphasizes the need for further harmonization of ESG standards and regulations across the region in order to promote sustainable development and investment opportunities. The conducted research leads us to the conclusion that a crucial component of the ESG approach is transparency and the disclosure of information regarding the operations of European businesses and organizations. By implementing ESG reporting, stakeholders (such as shareholders, investors, employees, clients, and society) can be provided with objective and trustworthy data on sustainable development, social responsibility initiatives, as well as the achievement of targets and indicators in these domains. The implementation of the ESG framework in practice fosters the establishment of an efficient management framework that addresses and balances environmental, social, and corporate risks associated with economic activities. This, in turn, may contribute to achieving sustainable development objectives within a broader socioeconomic context. Therefore, the ESG concept serves as a significant tool for managing the attainment of sustainable development aims at the organizational level.

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MAPPING THE NEEDS OF THE TOURISM DESTINATION FROM BUSINESSES' PERSPECTIVES - VLORA REGION DESTINATION

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ABSTRACT

Compared to long-established industries, the rapid growth of the tourism industry plays a crucial role in driving Albania's economic development. In recent years, the tourism industry and related sectors have contributed significantly to Albania's GDP, accounting for 26.2%. They also play a crucial role in generating employment opportunities, fostering growth for small and medium-sized enterprises, and promoting the overall welfare and social progress of the country. Despite the progress made in this sector, there are still challenges such as seasonality, the utilisation rate of tourist attractions, infrastructure, and the implementation of sustainable development policies. Developing countries are clearly dealing with a crucial issue when it comes to achieving sustainable development across various economic and non-economic sectors. This research study aims to analyse the challenges faced by tourism companies in the Vlora Region. The main goal is to evaluate this tourism destination from the perspective of tourism businesses, mapping the needs and challenges to sustainable tourism development. The data were gathered by administering a structured questionnaire that focused on the analysis of the variables related to the level of development in the tourism sector. The disseminated questionnaire included closed-ended questions related to (i) the type of tourism developed mostly in the destination, (ii) the evaluation of infrastructure and facilities in the touristic destination, (iii) the perceived quality of the services offered by tourism companies, (iv) the current level of tourism development in the destination, and (v) the factors that hinder the performance of the companies. After the pilot phase, a structured questionnaire was used to collect the primary data. A total of 235 businesses in the tourism sector were sent the questionnaire by mail. Out of these, 182 businesses responded and provided valuable information regarding the assessment of the tourist destination, as well as identifying its challenges and weaknesses. According to the data analysis on the current situation of the tourism industry in the Vlora region, the respondents highlighted several needs and challenges for the future development and improvements of the destination. The findings of this study make a valuable contribution to existing research by emphasising the crucial role of tourism development. They also provide useful suggestions for local authorities managing the destination, aiming to overcome challenges and promote year-round tourism in the region.

Keywords: *business perspectives, challenges and needs, sustainable development, tourism industry*

1. INTRODUCTION

Tourism in Albania is considered one of the main pillars of the country's economy and continues to develop, despite the high competition from other international destinations. According to the statistics, the tourism industry and related industries contribute 26.2% of Albania's GDP (World Travel & Tourism Council, 2018), and there is enormous growth potential in comparison to other developed nations that have attained a sustainable growth rate.

Furthermore, Albania's increasing popularity as a tourist destination over the past few years has enormous potential for diversifying the types of tourism offered beyond conventional package vacations. Albania is included on the list of nations with significant potential for natural, historical, and cultural heritage. This destination is home to an abundance of natural attractions, including the Adriatic and Ionian coasts, national and nature parks, protected areas, and wetlands. Tourism and agricultural development have tremendous potential in riverine and wetland environments (Ministry of Tourism and Environment, 2018). It is one of the country's most important socioeconomic resources for creating employment opportunities, job growth, and the advancement of infrastructure and technology (Rovo et al., 2020). Compared to other well-known cross-border countries, Albania is a rather new tourism destination. Due to its impressive natural environment and diverse attractions, this destination offers opportunities for a wide range of tourism categories. The abundance of opportunities, coupled with the variety of landscapes and the mild, moderate climate, allows for a rich and diverse product offer (RisiAlbania, 2015). As the country has almost paved the way for further development, the typical tourism product is a rather general one that encourages visitors to discover the many facets of Albania's culture and nature. Under this umbrella, specialised tourism products are developed, increasing the variety of opportunities for the primary tourism market and other specialty markets (RisiAlbania, 2015; Dincu et al., 2016). Similar to other markets, the tourism market economy is influenced by the interplay of supply and demand (Mbrica et al., 2023). Multiple studies highlight the importance of stakeholders' collaboration as a key component for effective destination management (Evans, 2009; Sotiriadis & Shen, 2017) and creating a balanced performance towards development and growth. As tourism continues to evolve and destination faces diverse challenges, the need for cohesive efforts among local governing bodies, private enterprises, and communities becomes increasingly evident. Effective coordination serves as essential for satisfying the needs of the destination and creating a desirable location for tourists (Roxas et al., 2020). For this reason, this study is seen as an extended analysis to evaluate the destination from the perspective of tourism industry companies as a key actor stakeholder. Its goal is to map the need analysis in order to further improve the destination management.

2. METHODOLOGY

The methodology is mainly based on a summary of the main variables related to the development of tourism and the difficulties encountered, followed by the assessment of their importance from the perspective of companies operating in the tourism industry. The research is based on the analysis of primary and secondary data related to the current situation of the tourist destination and the challenges that tourism sector faces. The implementation of a questionnaire as the primary means of gathering information has been recognised as a widespread approach in empirical research. The questionnaire was carefully designed with a particular emphasis on the primary research objective, which relates to the examination of the tourism sector through the lens of business enterprises that operate within this domain. The first section of the questionnaire directed towards tourist companies aims to obtain fundamental information regarding the study's population, such as the duration of the company's operation within the tourism sector, its geographical location, the nature of its activities, the size of its workforce, the occupancy rate, and its main consumer demographic. In addition, the questionnaire comprises inquiries aimed at providing insights from companies regarding the factors that motivate tourists to visit the tourist destination. The questionnaire comprises a crucial set of inquiries concerning the challenges and prospects of conducting business in the tourism sector. Additionally, it aims to evaluate the perception of companies regarding the infrastructure and amenities accessible in the tourist destination, the standards of services offered, existing obstacles to conducting business, and the expectations of public institutions

with regard to the development of the tourism industry. The target demography for touristic enterprises includes the Vlora region, which comprises the city of Vlora, as well as businesses involved in the tourism sector along the coastline of Orikum to Himara and nearby areas. It mainly involves entities such as accommodation, maritime infrastructure and coastal facilities, travel organisers and recreational activities along these stretches of coastline. According to the Institute of Statistics, during the year 2018, 1,326 accommodation structures (hotels, camps, guesthouses, farmhouses, mountain shelters, apartment, villas and other structures for short-term stays) operated throughout the country. Hotels occupy about 65% of the total, while the rest are houses and rooms. Additionally, in the study population for this touristic destination, there are 14 registered companies, including 6 tourist operators and 8 travel companies. In order to enhance the representativeness and reliability of our findings, we attempted to disseminate the survey to a vast majority of accommodations, the well-known and traditional restaurants in the city which have a good reputation and popularity in the area, and the travel agency. The data were collected through a self-administered questionnaire survey. Questionnaires were sent to almost 235 different companies in the industry. Out of the total number, 182 responses were received completing correctly the questionnaire. The questionnaires were administered between September to October 2023, and the response rate, determined by dividing the number of companies that responded by the total number of companies contacted, resulting in a response rate of 77.4%. The statistical value meets the acceptable threshold for further analysis, indicating that the sample size is representative of the population.

3. RESULTS AND DISCUSIONS

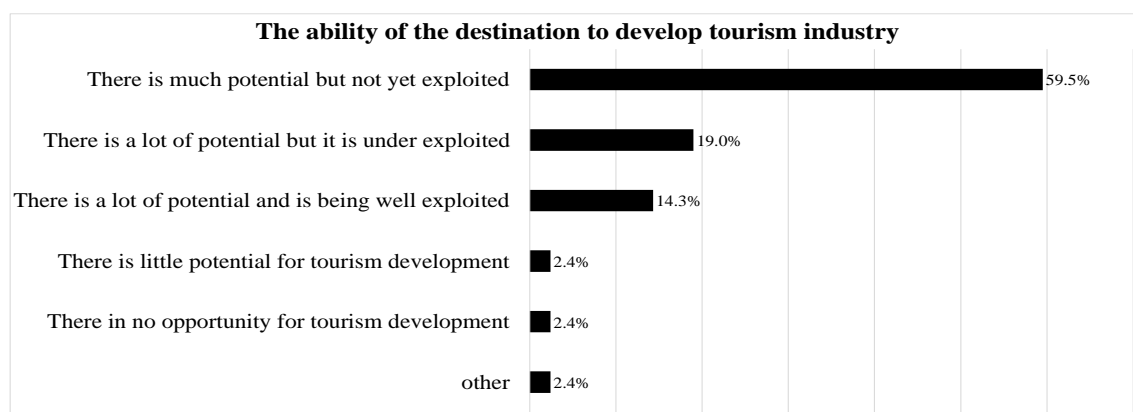
All the surveyed companies operate within the tourism industry and include accommodation structures, restaurants, and other companies providing tourism services, such as tourism operators and travel agencies. Starting in 1993, the surveyed companies had different industry lifespans. By weighing the lifespans of the surveyed companies, we see that the average lifespan in the industry is relatively high at 17 years. The average longevity shows that the second and third decades, in these 30 years of Albanian development after the difficult period of economic and political transition that our country went through, have had the highest rates of companies registered in the tourism sector. The development of the tourism sector in Vlora refers to the suitable conditions and high resources that this region has, which create development opportunities for different types of tourism. Table 1 summarises information about the sample size's demographics. As can be seen from the total number of surveyed companies, 52.4% of them are sole proprietorships and 38.1% are partnerships. Influenced by seasonality, many of the accommodation structures along the coastline have been established as family businesses or small businesses. This evidence was shown in several statistics published by the Institute of Statistics in Albania.

Demographic Category	Percentage	Companies' distribution by the number of employees	Percentage
Sole proprietorship	52.4%	Less than 9 employees	54.8%
Partnerships	38.1%	10 - 20 employees	19%
Limited liability company	7.1%	21 - 50 employees	19%
100% foreign companies	2.4%	More than 50 employees.	7.1%
Companies' distribution by field of business		Companies' distribution by operating area	
Accommodation	54.8 %	Vlora	81%
Bars and restaurants	28.6%		
Tour operators	14.3%	Dhermi, Himara, Orikum, Llogora, and	19%
Touristic agencies	2.4 %	other nearby areas	

*Table 1: Sample characteristics [n= 182]
 (Source: Authors' calculations)*

Regarding the number of employees, 54.8% of companies employ less than nine people, 19% have between 10 and 20 employees, and the same percentage represents companies with between 21 and 50 employees. Finally, 7.1% of companies employ more than 50 people. It's evident that the majority of companies employ fewer than nine people. These results are directly related to the size of the companies, mainly small ones, but are also influenced by the seasonal character of the tourism sector. The summer has the highest level of activity, with a low extended tendency during the autumn and spring seasons. Additionally, some small companies operating in this industry tend to cut transaction costs by using family members as human resources during the low seasons. Based on the collected data, 81% of the surveyed companies operate mainly in Vlora city, while the other remaining companies operate in Dhermi, Himara, Orikum, Llogara, and nearby areas. These areas are known for their large number of tourist attractions, heritage sites, the sea, the archeological park, and the Llogora National Park. Although the low number of tour operators and travel agencies compared to other types of tourism businesses, the majority of responses focused on the high presence of accommodation structures and restaurants, which remain one of the pillars of tourism development, and the potential for value-added creation in this industry. As can be seen from the sample characteristics shown in Table 1, most of the companies offer accommodation services. 54.8 % of them are accommodation structures, and 28.6% are identified as bars and restaurants. The remaining part, respectively 14.3% and 2.4% of the companies, perform as tour operators and tourist agencies. As Evans (2009) highlighted, it should be noted that in most of the cases, the companies operate across two or more sectors in the tourism industry. Seasonality is one of the most important aspects of our country's tourism industry development. This is noticed through tourist movements, seasonality in employment, and annual fluctuations, passing from the peak to the worst period for these businesses. Due to the seasonality of tourism, companies face many problems with the level of services provided, resulting in inefficient resource use, loss of profit potential, and scheduling difficulties. In particular, seasonality affects the number of tourists and therefore can threaten the viability of businesses in this destination (Kruja et al., 2012). Referring to seasonality, 92.2% of companies point out that the most frequented period of the year is the summer season, and according to 7.8% of the surveyed cases, the most frequented period by tourists is the autumn season. Despite the maritime and coastal tourism that "conditions" the tourist flow during the warm summer season, the district of Vlora is known as an attractive destination as a result of many investments in new types of cultural tourism products, the presence of the National Park of Llogara, which is easily accessible, as well as the rich culinary tradition that characterises this destination. As cultural heritage attractions and natural beauties are attractive throughout the year, this type of tourism should be one of the reasons to increase the seasonal span of tourism in this destination. In addition to the aforementioned factors, the influence of seasonality is also evident when monitoring the occupancy rate of tourist accommodation structures. During the summer season, it is observed that the highest frequency of cases, approximately 65.7%, corresponds to an occupancy rate ranging from 81–100%. Conversely, the lowest rate of occupancy in accommodation structures, from 0 to 20%, has the highest value during the winter period. Referring to the reasons that motivate tourists to visit this tourist destination 85.7% admit that one of the main reasons to frequent this destination is coastal and maritime tourism. Due to the favorable conditions of the Albanian coast, with a long coastline, a geographical position, and a mild climate, the tourism industry is currently focused on balneal tourism. In addition to balneal tourism, natural beauties, visits to the national park and surrounding areas, archeology, cultural heritage, and gastronomy are identified as strengths that develop the tourism sector in this tourist destination. Despite the infrastructural difficulties, the mountain tourism in the country is developing through organised tours of local and foreign tourists who choose to visit the mountain areas.

As a result, one of the challenges that the tourism sector faces is the continuous efforts that should be devoted to the diversification of the tourism product by the private sector and the government authorities by developing and improving this product to encourage existing tourists and attract new potential tourists (UNWTO, 2020; Burlea-Schiopoiu & Ozuni, 2021). Developing countries are clearly dealing with a crucial issue when it comes to achieving sustainable development across various economic and non-economic sectors (Stevanović et al., 2023). Despite the challenges and difficulties faced by companies operating in the tourism industry, there is a high level of optimism about the potential and opportunities for development. Based on the collected data, Figure 2 presents the ability of the destination to develop the tourism industry. 14.3% of companies view the tourist destination as rich in potential and already well exploited; 19% of them are optimistic about the development opportunities, but these potentials are underexploited; and 59.5% confirm that the tourist destination is rich in opportunities to develop but not yet exploited. According the statistics about the average money spent by tourists in Albania, generally, it is notably lower in comparison to South/Mediterranean EU nations (UNWTO Tourism Highlights 2018) reflecting the “low-cost” tourism trending in Albania. However, it also indicates the existence of potentials that the tourism industry is a growing and very promising industry for the Vlora region to be exploited. The development of nature-based tourism, seaside landscapes, green landscapes, beaches, climate and biodiversity, parks, culture, and archeological sites provide great opportunities for tourism as a generator of economic development. The development of tourism along the coastline represents great potential and is seen as the focus of many investments. Despite coastal and maritime tourism, the declared protected areas, due to their high natural values, remain strong support for tourism development.



*Figure 1: Destination ability to develop tourism industry.
 (Source: Authors elaboration)*

Another issue discussed in the questionnaire aims to evaluate some of the factors seen as advantages of doing business in the tourism industry based on a Likert scale ranging from 1 to 5 (1 = strongly disagree, 5 = totally agree). The summarised table shows the values of the mean, median, and standard deviation of each indicator. As can be seen in Table 2, the results show natural attractions (median score of 5) as one of the advantages of the development of tourism in this destination. Other important factors seen as advantages for tourism development (median score of 4) are historical and cultural attractions, low cost compared to countries in the region, destination reachability, the image of the destination, and the existence of a regulatory framework for the tourism sector. Among the factors with the lowest positive impact and that do not constitute an advantage for the development of tourism businesses (median score of 3) are ease of management, support from local and central institutions, and fiscal facilities for these businesses.

Due to the seasonality that characterizes the tourism sector in this destination, the short time of workforce employment is also impacted by the structure and company's size; mainly for small companies and family businesses, some of the employees are family members. The dependence on seasonal trends creates difficulties in managing these businesses. Referring to the support from local and central institutions, many researchers argue that government involvement is fundamental for sustainable development. Externalities and investments in public goods and services are the main reasons for the government's involvement in tourism development. A constant concern, which is confirmed even through the results shown in Table 2, is related to how effectively the governments have been supporting the tourism industry and offering fiscal facilities during difficult periods. Despite the fact that the government has undertaken a number of legal initiatives in order to create and provide fiscal facilities, mainly for accommodation structures such as hotels/resorts that benefit from the special status until December 2024, not all small tourism companies are beneficiaries of this package.

	Mean	Median	Std. Deviation
Natural attractions	4.36	5	1.100
Cultural and historic attractions	3.81	4	1.194
Low cost	3.55	4	1.273
Easily managed	3.26	3	1.106
Support from local/central institutions	2.86	3	1.354
Destination reachability	3.71	4	1.175
Destination image	3.93	4	1.045
Existence of regulatory framework for tourism	3.33	4	1.356
Fiscal facilities	3.02	3	1.440

*Table 2: Evaluation of the advantages of doing business in the tourist destination [N=182]
 (Source: Authors' calculations)*

The evaluation of the tourist infrastructure and facilities in this tourist destination is another question that requires the attention of the surveyed companies. Based on a Likert scale ranging from 1 to 5 (1 = I cannot judge, 2 = very poorly, 3 = rather poorly, 4 = rather good, 5 = very good), the companies have evaluated each of the variables related to the infrastructure and tourist facilities. As can be seen in Table 4, accommodation (the adequate number of beds), transport infrastructure (roads, parking), and the proximity of trade centers, souvenir shops, and banks are some of the variables that most companies evaluate as rather good (median score of 4). According to the statistics analysed from secondary data (INSTAT, 2022), the indicators related to accommodation (the number of beds) have increased. This evidence was also confirmed by the surveyed companies. Nevertheless, the real figures should be higher due to the high level of informality in this sector. Another variable rated with a median score of 4, is transport infrastructure. The road infrastructure has improved significantly in recent years, despite the fact that there are still some unfinished roads or others that need investment. Due to the geographical position of this destination, in recent years investments in infrastructure have facilitated the destination's reachability and the movement of domestic and foreign tourists. Furthermore, the geographical distribution and location of service units, banks, and shopping centers, easily enable accessibility for everyone. From the surveyed companies' point of view, among the factors with the lowest impact on this group of variables is the public transport and opportunities for recreational activities (medium score of 3). Currently, national transport for tourists is done through public transport buses or through the transport of tour operators. There are a significant number of travel companies in Albania which are focused on providing travel services for resident citizens and visitors. They operate in cooperation with tour operators or accommodation structures.

Recently, a wide network of companies offering rental car services has started operating. However, this is a new service that needs time to be consolidated. Most of the companies promote themselves by social media and have not invested in creating a more formalised system to be in touch with the tourist. In the context of recreational activities, one of the priorities of tourism strategies is investing in other components of the tourist offer, such as sports and entertainment activities. In terms of cultural activities (opportunities for entertainment and social activities), there is a small percentage of companies that choose to offer this service (median score of 3). In the framework of the development of tourism in Albania, adventure tourism is one of the newest forms of tourism where tourists are oriented towards types of adventure sports and outdoor activities favored by the natural resources available in Albania (Skendo, 2021). As can be seen, this factor is actually the last-ranked evaluation from the companies, which means that investing in entertainment and social tourism activities can potentially enhance the appeal of Albania as a tourist destination and elevate its position in the competitive tourism market. Table 3 presents a summary of companies' evaluation regarding the infrastructure and facilities in this touristic destination.

	Mean	Median	Std. Deviation
Accommodation (number of beds)	3.57	4	1.327
Transport infrastructure (roads, parking).	3.69	4	1.114
Public transport	3.07	3	1.154
Proximity of trade centers, souvenir shop, banks	3.64	4	0.931
Opportunities for entertainment and social activities (parks, garden, theatre)	3.07	3	1.294

*Table 3: Evaluation of infrastructure and facilities in the touristic destination [N=182]
 (Source: Authors' calculations)*

Information is attempted to be provided referring to the quality of the main services provided in this tourist destination. Table 4 provides a summarised overview of the results. As can be seen from the values of the median and standard deviations, the quality of food has a very high score (median score of 5). Restaurants and other food services enjoy a good image of healthy and traditional food, which is promoted as one of the main attractions of tourist products. Among the services, other important factors that were rather well evaluated are accommodation options, advisory lanes for motorcycles and bicycles, and hygiene and cleanliness of the destination (median score of 4). Investments in the city's main boulevard have created opportunities for bicycle lanes. The hygiene and cleanliness of the destination also received positive evaluations. There is an increased awareness among all interest groups of the importance of hygiene and cleanliness, creating a competitive advantage among tourist destinations. What is evident from the analysed data is that services for people with disabilities have a low rate of evaluation (median score of 3). This means that this group of individuals needs more investment in this tourist destination.

	Mean	Median	Std. Deviation
Food quality	4.31	5.00	1.047
Accommodation	4.14	4.00	0.872
Transport	3.52	3.00	0.994
Advisory lanes for motorcycles and	3.55	4.00	1.131
Services for handicap people	3.12	3.00	1.087
Hygiene and cleanliness of destination	3.55	4.00	1.064

*Table 4: Quality evaluation of the services in the touristic destination [N=182]
 (Source: Authors' calculations)*

Based on a Likert scale with a range of 1 to 5. (1 = I cannot judge, 2 = very poorly, 3 = rather poorly, 4 = rather good, 5 = very good), the companies have evaluated each of the variables related to the current level of tourism development in this tourist destination. According to Table 5, the results show that the friendliness of locals toward visitors is the most relevant variable among others (median score of 5). The tourism industry is otherwise known as the hospitality industry. The high value of the median score concerning the hospitality of the local population and tourism companies, which seek to meet customer expectations, is one of the most important factors of the tourism development process. Among other factors, rather well evaluated (median score of 4) are: providing information about the destination (information centers, website), use of signage (including maps, directions), the care of touristic attractions, the care of visitors' safety, and small retail shops (souvenirs, gifts).

	Mean	Median	Std. Deviation
Providing information about the destination (information	4.31	4.00	1.124
Use of signage (including maps, directions)	3.60	4.00	1.073
Care of touristic attractions	3.38	4.00	0.976
Care of environment	3.29	3.00	1.088
Care of visitors' safety	3.71	4.00	1.215
Range of leisure programs	3.26	3.00	1.037
Small retail shops (souvenirs, gifts)	3.43	4.00	1.063
Friendliness of locals to visitors	4.31	5.00	1.137
Cooperation between public and private sector related with communication, exchange of information	3.19	3.00	1.174
Cooperation between public and private sector related with creation of tourist products (offer)	3.00	3.00	1.249
Cooperation between public and private sector related with promotional activities from local government	3.19	3.00	1.153
Involvement in social dialogue on tourism related issues	3.10	3.00	1.165

*Table 5: Current level of tourism development [N=182]
 (Source: Authors' calculations)*

Providing information about the tourist destination (median score of 4) has to do with obtaining online information through national or regional promotional and informative websites, or personal contacts. Although the use of the Internet is widespread, it remains difficult to fully and sufficiently search all online destinations. However, it is a fact that the use of the Internet has greatly increased the number of rooms occupied per night. The use of signage (including maps, and directions) is another important indicator of current-level development (median score of 4). Recently, there has been a significant improvement in equipping tourists with guide maps, as well as accurately determining the location of registered companies on electronic maps accessible via the Internet. It seems that there is a growing awareness concerning the protection of tourist attractions (median score of 4) as an opportunity for tourism development, increasing the number of domestic and foreign tourists. Unlike many years ago, when development practices were accompanied by a high level of informality and several negative impacts on the natural heritage system, such as damage to protected areas, forest damage, habitat destruction, and water pollution, nowadays, there is an increased awareness to protect the environment and tourist attractions. Care of visitors' safety remains one of the dimensions of tourism development indicators closely related to the supply chain of this sector in cooperation with other industries (median score of 4). There is a growing awareness that the image of tourist safety is one of the competitive advantages of a tourist destination.

Increased road safety, adding signage, and compliance with traffic rules are some of the indicators that are constantly improving. Furthermore, the development of sports and adventure tourism has created increased security measures for tourists, thus improving the credibility of the companies that offer this tourist product. One of the expected benefits from the development of tourism and its impact on the local economy is the opening of many small retail (souvenir and gift) shops. Recently, small businesses that sell authentic and artisanal objects identifying the cultural heritage of this destination have become widespread and easily accessible to all tourists. Through the development of souvenir 'production and handicrafts, this sub-sector has a special role and potential importance for the tourism value chain. It contributes to local economic development as well as keeping alive the traditions of the tourist destination. Among the indicators assessed "rather poorly" are: care of the environment, range of leisure programs, cooperation between the public and private sectors, and involvement in social dialogue on tourism-related issues (median score of 3). There is still a lot to do in terms of environmental care, organising entertainment programs as tools for promoting an alternative tourism model (Porfido, 2022) (festivals, carnivals, theatre, celebrating local and national events, the opening of the tourist season, book promotions, exhibitions, fairs, and children's activities), and increasing cooperation between the public and private sectors. From the evaluation of the surveyed companies, there is still a lot to do to improve the efficiency of cooperation between the public and private sectors. In addition, 50% of the surveyed companies are not aware of the National Sustainable Tourism Strategy. This highlights the lack of comprehensive dialogue between the actors that are directly related to tourism, such as businesses, local and central government, and the local community. Based on the data collected from the surveyed companies and as shown in Table 6, referring to the factors that hinder the activity and performance of business companies, some of the variables are seasonality, updating of new technologies, lack of experience working in tourism, and changes in the political and economic environment (median score of 4). Due to the high impact of this industry on social and economic development, it is necessary to continuously improve the factors that hinder the performance of companies operating in this industry. Referring to the updating of new technologies and a lack of experience, according to the 2018 survey of the World Bank, companies reported problems with lack of skills and skill mismatch. Similarly, even foreign-owned companies with the highest levels of productivity often experience limitations due to inadequate skills (World Bank, 2018). It's not uncommon for companies to face challenges related to skill gaps and mismatches, especially in rapidly evolving industries where new technologies emerge frequently (Buselic & Banko, 2021). Lack of relevant skills can hinder companies' ability to adopt new technologies effectively, innovate, and maintain competitiveness in the tourism market. Addressing skill gaps and mismatches requires concerted efforts from various stakeholders, including governments, educational institutions, and businesses themselves. Investing in education and training programs that are aligned with the needs of the labor market, promoting lifelong learning initiatives, and fostering collaboration between industry and academia are some strategies that can help mitigate these challenges and ensure a skilled workforce capable of driving innovation and economic growth.

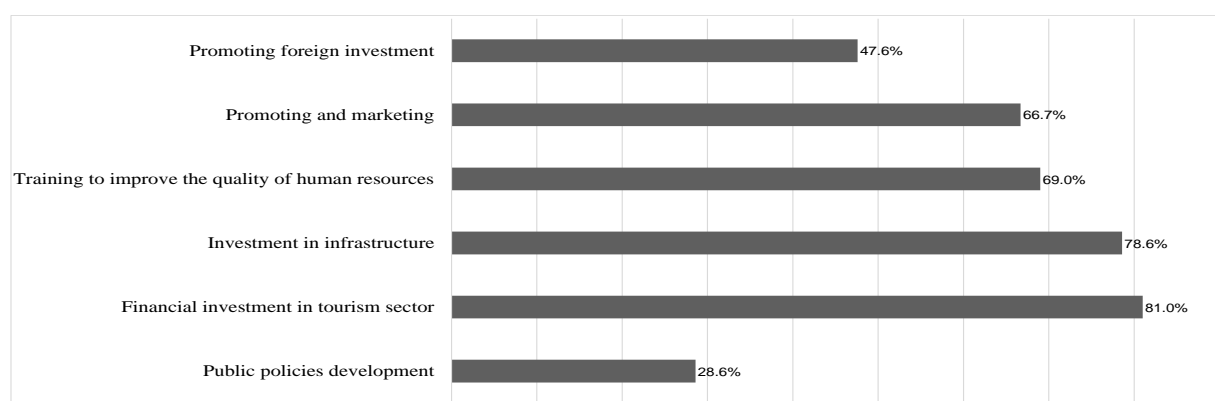
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	Mean	Median	Std. Deviation
Environmental pollution	3.43	3.00	1.345
High level of competitiveness	2.83	3.00	1.187
Seasonality	3.74	4.00	1.212
Barriers on communication and language	2.19	2.00	1.214
Lack of infrastructure	2.83	3.00	1.304
Lack of entertainment parks, gardens	3.07	2.50	1.437
Lack of professional training	3.40	4.00	1.288
Updating of new technologies	3.40	4.00	1.192
Government`s role enhancing the image of	3.29	3.00	1.348
Community and cultural factors	3.33	3.00	1.224
Lack of cooperation between businesses, government and the local community.	3.33	3.00	1.242
Financing and liquidity	3.36	3.00	1.225
Lack of experience working in tourism	3.48	4.00	1.272
Lack of tourism service packages	3.24	3.00	1.359

*Table 6: Factors that hinder the performance of the companies [N=182]
 (Source: Authors' calculations)*

Regarding the support from public institutions (median score of 3), some of the strategic priorities for helping and facilitating the tourism industry are presented in Figure 2. Financial investments in the tourism sector and investments in infrastructure, respectively 37 and 33 times, are seen as the most encouraging interventions with the highest frequencies. Other issues that need intervention from private and public sector institutions are: training to improve the quality of human resources (68% of the responses) and promotion of tourist destinations (67% of the responses).

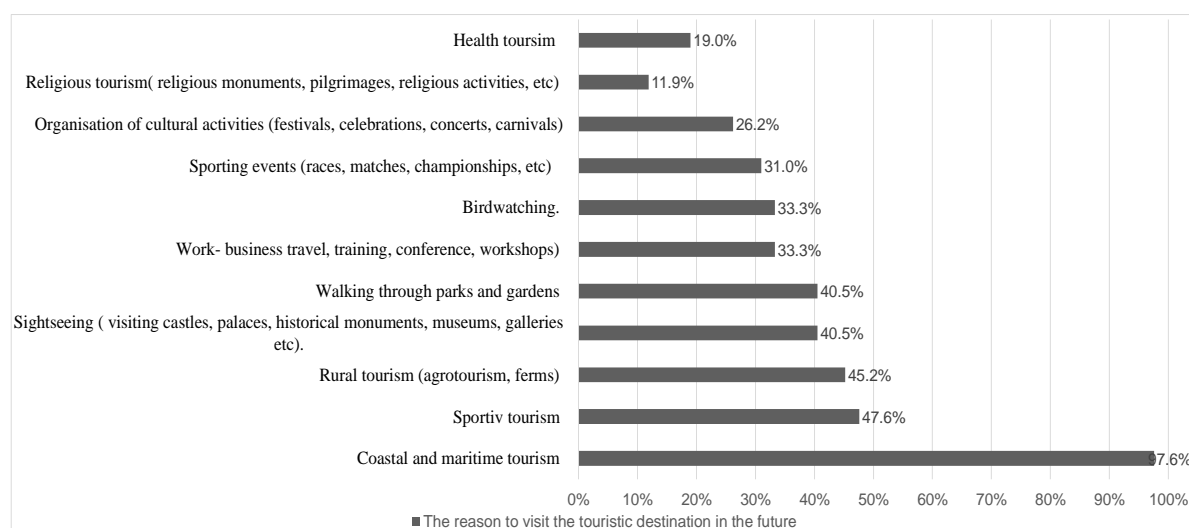
The following are some of the most important interventions in the promotion and marketing of the destination that will improve future development: promoting the destination in the key tourism markets through a strategic and comprehensive marketing campaign; incorporating the joint efforts of various stakeholders (national and local institutions and private businesses) in the tourism marketing process; and taking part in well-known international fairs and exhibitions.



*Figure 2: Government issues to encourage the development of the touristic destination.
 (Source: Authors elaboration)*

Figure 3 summarizes the companies' evaluations of why tourists should choose this destination in the future. Balneal tourism continues to remain one of the main attractions for tourists due to the warm climate and favourable conditions for its development.

However, the seasonality that characterizes maritime and coastal tourism is an incentive to promote the creation of new opportunities for all-year tourism development. Based on the companies' responses, some of the reasons that tourists should choose this destination in the future are the potential development of sportive tourism, the exploitation of rural tourism through agrotourism and farms, the promotion of historical and cultural tourism, as well as walks and visits to parks and gardens. National natural parks can be turned into an effective way to generate good economic incomes through sustainable development while enriching the country's tourist offer.



*Figure 3: Reasons to visit the tourist destination in the future.
 (Source: Authors` Elaboration)*

4. CONCLUSION

This paper focuses on the evaluation of the tourist destination from the point of view of tourist companies, with the aim of highlighting the difficulties and challenges that require continuous improvement in the fulfillment of sustainable tourism and the promotion of further tourism development. Vlora is a destination that offers plenty of resources, facilitating the growth of diverse forms of tourism. The geographical position, the favorable climatic conditions, the opportunity for investment and the opening of new businesses, and the increase in the employment of young people, are some of the conditions that categorise this industry among the national priorities of economic and social development in the country. For this reason, identifying and exploiting opportunities hold equal significance as the identification of challenges and obstacles, with the crucial aim of transforming them into tools and goals for sustainable development and growth. For the same reason, it is worth emphasising that the role of tourists and reaching their level of satisfaction is equally important as the role of tourist companies and their assessment in helping to improve and support sustainable development. In this study, multiple variables related to tourism sector such as: (i) the type of tourism developed mostly in the destination, (ii) the evaluation of infrastructure and facilities in the touristic destination, (iii) the perceived quality of the services offered by tourism companies, (iv) the current level of tourism development in the destination, and (v) the factors that hinder the performance of the companies, are used to assess the Vlora Region destination, from a business perspective. Referring to the tourists' motivation to visit this destination, one of the main reasons is coastal and maritime tourism.

In addition to balneal tourism (sun and sea tourism), natural beauties, visits to the National Park and surrounding areas, archaeology, cultural heritage, and gastronomy are identified also as strengths that develop the tourism sector in this tourist destination. Despite the infrastructural difficulties, mountain tourism in the country is developing through organised tours for local and foreign tourists who choose to visit the mountain areas. The most important factors, seen as advantages for tourism development are natural attractions, historical and cultural attractions, low cost services compared to countries in the region, destination reachability, the image of the destination, and the existence of a regulatory framework for the tourism sector. Among the factors with the lowest positive impact and that does not constitute an advantage for the development of tourism businesses are: the ease of management, support from local and central institutions, and fiscal facilities for these businesses. Direct support, such as funding for infrastructure development or marketing campaigns promoting the attractiveness of the country's tourism potential, can certainly benefit the tourism industry. This demonstrates that there is still a requirement for enhancement of these indicators. Referring to the evaluation of the tourist infrastructure and facilities in this tourist destination, the accommodation (the adequate number of beds), transport infrastructure in terms of roads and parking and proximity of trade centers, souvenir shops, and banks are some of the indicators that most of the companies evaluate as rather good. From the surveyed companies' perspectives, among the factors with the lowest impact on this group of variables are public transport and opportunities for recreational activities. This demonstrates that there is still a requirement for enhancement of these indicators. The information on the quality of the main services provided in this tourist destination shows that the quality of food has a very high evaluation. Among the services, other important factors that are rather well evaluated are accommodation options, advisory lanes for motorcycles and bicycles, and the hygiene and cleanliness of the destination. What is evident from the analysed data, services for disabled people have a low rate of evaluation. This means that this group of individuals needs more investment in this tourist destination. The companies have evaluated each of the variables related to the current level of tourism development in this tourist destination. According to the results, the friendliness of locals towards visitors is the most relevant variable among the others. Among other factors, rather well evaluated are: providing information about the destination (information centers, websites), use of signage (including maps and directions), care of touristic attractions, care of visitors' safety, and small retail shops (souvenirs, gifts). Regarding the factors that hinder the activity and performance of business companies, some of the variables are seasonality, the updating of new technologies, a lack of experience working in tourism, and changes in the political and economic environment. Due to the great impact of this industry on social and economic development, it is necessary to continuously improve the factors that hinder the performance of companies operating in this industry. The surveyed companies confirmed that the most strategic priorities for helping and facilitating tourism are: financial investments in the tourism sector (81%); investments in infrastructure (78.6%); training to improve the quality of human resources (68% of the responses); and promotion of tourist destinations (67% of the responses). As a result of the fact that the majority of visitors come to Vlora for coastal and maritime tourism, the companies have confirmed that this sector of the economy is still very popular due to the region's warm climate and favorable conditions. However, the seasonality that characterizes maritime and coastal tourism is an incentive to promote the creation of new opportunities for the development of all-year tourism. It is necessary to reshape and design tourist offerings that incorporate all the potential tourist attractions helping to distribute tourist visits evenly throughout the year by providing a comprehensive tourist experience that promotes sustainable tourism and enhances the quality of available resources.

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EFFICIENCY OF MOTOR HULL INSURANCE IN CROATIA INSURANCE INDUSTRY

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ABSTRACT

The main goal of the research is to analyze the efficiency of Croatian insurance companies in motor hull insurance. Previous research studies the overall efficiency and efficiency by life and non-life insurance segment of insurance companies in the Republic of Croatia. Efficiencies within the non-life group of insurances are researched by this paper. The conducted analysis investigated the efficiency of insurance companies in motor hull insurance with the DEA methodology with the application of the BCC model. Due to its more general assumptions, the BCC model is closer to business in the real world, which is why it was applied in the research. When choosing the input or output orientation of the BCC model, the researched literature recommends the input orientation due to the assumption that insurance companies have a greater influence on inputs than on outputs. Inputs in the model are business expenses, which consist of acquisition costs and administration costs, and expenses for insured cases. Earned premiums are the basic income from the activities of insurance companies and are therefore taken as the output of the model. The analysis covers active insurance companies operating in the motor hull insurance segment in the Republic of Croatia in the period from 2016 to 2022. The research showed that the two insurance companies with the highest market shares in earned premium achieved complete efficiency in all years. Among insurance companies with lower market shares, two insurance companies are completely efficient in all analyzed years. The obtained results were compared with the efficiency of total non-life insurance market. By comparing the average annual efficiency of non-life insurance and motor hull insurance, it was observed that the efficiency in motor hull insurance follows the trends in the efficiency of non-life insurance, except in 2019 when a significant fall in the average annual efficiency was recorded. This was followed by an increase in efficiency in 2020 above the level of efficiency in 2018. In the last observed year, the efficiency in hull insurance is approximately equal to the efficiency in non-life insurance with the same number of efficient and inefficient insurance companies.

Keywords: *DEA, motor hull insurance, non-life insurance, earned premium, business expenses, claims expenses, insurance companies.*

1. INTRODUCTION

Insurance business is specific due to the services it provides to policy holders, and which consists of risk transfer from the insured person to insurance companies. Insurance companies offer a wide range of products to individuals and business entities, and they also have an important role in financial intermediation, which contributes to financial and overall economic development (Karim and Jhantansana 2005). On the basis of the concluded contract, the insured is obliged to pay a pre-defined sum of money to the insurance company, while the company is obliged to pay a sum of money for repairing the damage caused by the insured event (Wang, 2001). The agreed amount of money for the transfer of risk is called the gross premium and represents the most important income in the insurance industry. Earned premium is calculated by the correction of gross written premiums for adjustment and charged adjustment of the premium value, for premiums passed in reinsurance and change of transferable premiums.

Insurance contracting, i.e. the sales process, is carried out through internal and external suppliers who are receiving a commission based on the contracted type of insurance. That is why business expenses in insurance companies are shown by groups of acquisition costs and administrative costs. Under acquisition costs, commission costs and other acquisition costs are shown separately, while administrative costs include all costs incurred outside the sales process. From this point of view, acquisition costs depend on the volume of sales, from which their variability arises, in relation to administration costs that do not depend on sales activities. Administration costs include costs incurred in connection with portfolio management, expenses for employees who do not work in insurance sales, and other material and non-material costs (Žager et al., 2008, 322). Business expenses and expenses for insured events have the most significant share in total expenses, and thus the greatest influence, from the expenditure side, on insurance companies' business performance. The efficiency of insurance companies is crucial for their survival. Efficient use and allocation of inputs and outputs is necessary to maximize profits and minimize costs (Učkar & Petrović, 50). For this reason, more and more research is focused on measuring the efficiency of the insurance industry at the micro level through the comparison of insurance companies and at the macro level through the comparison of insurance systems at the level of states (Škrinjarić, 2017, 4). Despite numerous analyses, according to our knowledge, no analysis of the efficiency of motor hull insurance has been carried out in Croatia, and therefore the focus of this research is precisely on this type of insurance. The data for the research were taken from the published financial reports of insurance companies, Hanfa and the Croatian Insurance Office. It should be emphasized that financial reports are the main source of accounting information used in measuring the efficiency of financial institutions' operations through the analysis of the relationship between individual values, generally accepted as indicators of efficiency (Jurčević & Mihelja Žaja, 2013, 204). The main goal of the research is to analyze and compare the efficiency of motor hull insurance in insurance companies in the Republic of Croatia. Given that there are ten insurance companies operating on the Croatian motor hull insurance market, which makes the sample too small for econometric models, DEA analysis was applied. The research analyzes efficiencies between insurance companies, in order to form conclusions about efficiency levels compared to market shares. After that, the efficiency of insurance companies in motor hull insurance is compared with the efficiency of the non-life insurance. The aim of the paper is to obtain information for defining and describing the efficiency of motor hull insurance in insurance companies in Croatia and Croatian insurance industry by applying scientific methods. Furthermore, the research opens a new possibilities in the research of efficiency by types of insurance and the impact on the overall efficiency of insurance companies.

2. LITERATURE REVIEW

An overview of conducted research in the field of efficiency and comparison in the international insurance industry in thirty-six countries was presented in their work by Eling and Luhnen (2010). The results of the research were obtained by comparing different methodologies, organizational forms and sizes of companies and indicate a constant growth of technical and cost efficiency on international markets with large differences between the analyzed countries. Cummins and Weiss (2013) gave an overview of the developed methodologies for the analysis of efficiency and productivity with an emphasis on application in the insurance industry and concluded that more than 59.5% use DEA analysis as the primary methodology. Kaffash and Marra (2017) focused their research on DEA models and their application in financial services. In the paper, they studied 620 relevant papers that apply the DEA method and grouped them into the areas of banking, funds and the insurance industry. Cummins and Xie (2016) evaluated the cost, revenue and profit efficiency of American property insurers in the period from 1993 to 2011 using the DEA methodology.

The obtained results showed that property insurers in the USA improved their efficiency and productivity throughout the observed period. Baros and Wanke (2016) studied efficiency drivers in the Brazilian insurance industry and proved that the results confirm the theory that the largest insurance companies are among the best in terms of efficiency. In her work, Škrinjaric (2017) analyzed the efficiency of the insurance industry in 29 European countries in the period from 2004 to 2013. The author proved that there are significant differences between efficient and inefficient companies and provided guidelines for improving the insurance industry in the analyzed countries. The analysis of efficiency in the European Union was also carried out by Žaja, Anđelović and Kedžo (2018). The results showed that fourteen out of a total of 26 analyzed countries of the European Union are above the efficiency average, and Croatia is among them. Research on the efficiency of Croatian insurance companies was conducted by Medved and Kavčić (2012). The authors investigated the efficiency of insurance in Croatia and Slovenia in the period from 2006 to 2010 using the DEA method. Research has proven that, on average, insurance companies in Croatia operate more efficiently than insurance companies in Slovenia, and that mergers and acquisitions of insurance companies have a positive effect on the growth of efficiency. The next research on efficiency in Croatia was done by Jurčević and Žaja (2013). The authors conducted measurements using the DEA method and accounting indicators and compared the results of the efficiency of banks and insurance companies in the period before and after the outbreak of the financial and economic crisis in Croatia. Their research was followed up by Učkar and Petrović (2022), who investigated efficiency levels with regard to the size of insurance companies in Croatia. The results showed that large insurers achieve above-average ROI, ROE and ROA values and below-average claims, expense and debt ratios. Kramarić, Pervan and Ćurak (2022) investigated the determinants of the efficiency of non-life insurance companies in Croatia. 18 insurance companies were investigated using DEA analysis and truncated regression, and the research results prove that age and ownership affect the efficiency of non-life insurance companies. The same authors conducted a study of the efficiency of the life and non-life insurance industry before and after Croatia's entry into the European Union and indicated an increase in overall technical efficiency in the life and non-life insurance sector in the period after Croatia's entry into the European Union.

3. RESEARCH METHODOLOGY

DEA analysis is a non-parametric method that calculates the efficiency of the decision-making unit (DMU) using linear programming. The output data of this method is expressed as a percentage value up to 100%, whereby a DMU that achieves a value of 100% is considered fully efficient and represents an example of good practice in combining input and output. Efficient DMUs form an efficient boundary for calculating efficiency measures in relation to other DMUs in the analyzed sample. There are two models of DEA analysis, the CCR model based on constant returns and the BCC model based on variable returns. By comparing the assumptions on which the models are based, it can be seen that the CCR model applies constant yields, and in the real economic world it is not expected that all inputs and outputs will change proportionally. From this point of view, the BCC model is more flexible because it assumes variable returns (Pervan et al., 74). Thus, the CCR model estimates total technical efficiency, while the BCC model estimates pure technical efficiency. Furthermore, the orientation of the model can be on input where input is minimized with unchanged output, on output where output is maximized with unchanged input, and a non-oriented model where inputs and outputs are simultaneously improved (Kramarić et al., 2022,152). The application of DEA analysis in the research was chosen because it can be used on a small sample, it can measure relative efficiency with more inputs and outputs, and as a non-parametric method it does not require a predefined specific functional form (Pervan et al.,74).

Because of its more general assumptions, the BCC model is closer to business in the real world, and that is why this model was applied in the research. In choosing the input or output orientation of the BCC model, the researched literature highlights the input orientation due to the assumption that insurance companies have a greater influence on inputs than on outputs. Such an assumption is advocated in their works by Elling and Luhnen (2010), Medved and Kavčić (2012) and Cummins and Xie (2013), while research by Cummins and Wess (2013) shows that most efficiency analyzes in the insurance industry are input-oriented. The selection of inputs and outputs were chosen in accordance with the literature investigating the field of efficiency in the insurance industry. Recommendations on the number of input and output units according to some authors Golany and Roll (1989) should be two times less than the analyzed DMUs, while other authors propose a stricter criterion according to which the number of input and output units should be at least three times less than the number of DMUs (Bowlin 1989). The success of insurance companies is most significantly influenced by income from insurance and investment business, business expenses and expenses for claims. The first input in the model is business expenses, which consist of acquisition costs and administration costs. Acquisition costs are related to the conclusion of the insurance contract, and arise immediately before and during the insurance contract. Administrative expenses include administrative expenses divided into depreciation, salaries of administrative staff and other administrative expenses. The second input in the model is expenditures for insured cases, which include all claims paid in the accounting period, regardless of the accounting period in which the claims occurred, reduced by the share of reinsurance in claims, increased by changes in claims reserves at the end of the accounting period, and reduced by changes in claims reserves at the beginning of the accounting period. periods. Earned premiums are the main income from the activities of insurance companies. The calculation of the earned premium is carried out so that the total calculated gross premium of the accounting period is corrected for corrections and collected value corrections, reduced by premiums transferred to reinsurance and corrected for transferable premiums. Based on information from financial statements of insurance companies, information was collected on annual business expenses and expenses for claims determined for inputs and for earned premiums as output of the model. Most of the analyzed insurance companies do not show income and expenses from investments by type of insurance, and therefore these variables were not included in the analysis. This analysis covers active insurance companies operating in the motor hull insurance segment in the Republic of Croatia in the period from 2016 to 2022. In the period from 2016 to 2018, three smaller insurance companies stopped operating. These companies were excluded from the analysis, so the DEA analysis was conducted on 10 active insurance companies.

4. APPLICATION OF RESEARCH

Tables 1 and 2 are showing the correlation analysis between the examined variables. Correlation coefficients in motor hull insurance and non-life insurance have high values, which is indicating a strong connection between input and output. The strongest correlation coefficients in motor hull insurance is between earned premium and expenses for insured cases, while in non-life insurance it is between earned premium and business expenses. All coefficients are positive, which indicates that it is possible to continue the DEA analysis. Descriptive statistics for selected inputs and outputs is presented in Tables 3 and 4, from which it is evident that insurance companies are of different sizes. According to the value of the earned premium, this difference ranges from 11.9 to 468.1 mil. kn. Differences are also noticeable in business expenses ranging from 3.7 to 175.9 mil. kn, while claims paid in the analyzed period range from 8.57 to 270.7 mil. kn. Notwithstanding these differences, every insurance company represents one DMU which is, by its structure, homogenous, it provides insurance services of motor hull insurance and operates in the same environment.

Substantial differences in the range of minimum and maximum value are also noted in inputs and outputs of the same insurance companies, observed in the values of non-life insurance in the same period.

<i>Description</i>	<i>Business expenses</i>	<i>Claims paid</i>	<i>Earned premium</i>
<i>Business expenses</i>	1		
<i>Claims paid</i>	0.939708777	1	
<i>Earned premium</i>	0.952993924	0.977794919	1

*Table 1. Correlation analysis for motor hull insurance
 (Source: author's own work)*

<i>Description</i>	<i>Business expenses</i>	<i>Claims paid</i>	<i>Earned premium</i>
<i>Business expenses</i>	1		
<i>Claims paid</i>	0.968774006	1	
<i>Earned premium</i>	0.992593857	0.985487554	1

*Table 2. Correlation analysis for non-life insurance
 (Source: author's own work)*

<i>Description</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Standard Deviation</i>
<i>Business expenses</i>	70	3,727.00	175,924.38	34,296.43	34,177.40
<i>Claims paid</i>	70	8,571.00	270,793.00	74,205.79	67,414.50
<i>Earned premium</i>	70	11,979.00	468,133.00	112,014.86	104,300.86

*Table 3. Descriptive statistics for motor hull insurance
 (Source: author's own work)*

<i>Description</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Standard Deviation</i>
<i>Business expenses</i>	70	49,673	1,041,878	270,165.51	228,791.48
<i>Claims paid</i>	70	41,417	1.22.9205	306,547.52	304,132.69
<i>Earned premium</i>	70	83.283	2,369,767	589,378.7	561.742,8478

*Table 4. Descriptive statistics for non-life insurance
 (Source: author's own work)*

Table 5. shows the annual results of pure technical efficiency obtained by the input-oriented BCC model applied to 10 companies which operate in the motor hull insurance segment in the period from 2016 to 2022. Table 6 compares the average efficiency and the average shares in the premium of motor hull insurance and non-life insurance per DMU.

<i>BBC</i>	<i>2016</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>
<i>DMU1</i>	91.28%	84.52%	100%	82.87%	100%	99.29%	100%
<i>DMU2</i>	100%	88.79%	91.19%	81.72%	82.70%	93.10%	90.68%
<i>DMU3</i>	100%	100%	100%	100%	100%	100%	100%
<i>DMU4</i>	100%	100%	100%	100%	100%	100%	100%
<i>DMU5</i>	92.45%	88.94%	98.63%	64.57%	99.56%	100%	99.33%
<i>DMU6</i>	100%	100%	100%	100%	100%	100%	100%
<i>DMU7</i>	89.00%	96.12%	90.26%	55.50%	95.93%	100%	100%
<i>DMU8</i>	100%	81.05%	83.67%	49.97%	87.44%	90.04%	82.41%
<i>DMU9</i>	89.07%	77.30%	82.54%	52.46%	84.79%	92.31%	87.78%
<i>DMU10</i>	100%	100%	100%	100%	100%	100%	100%

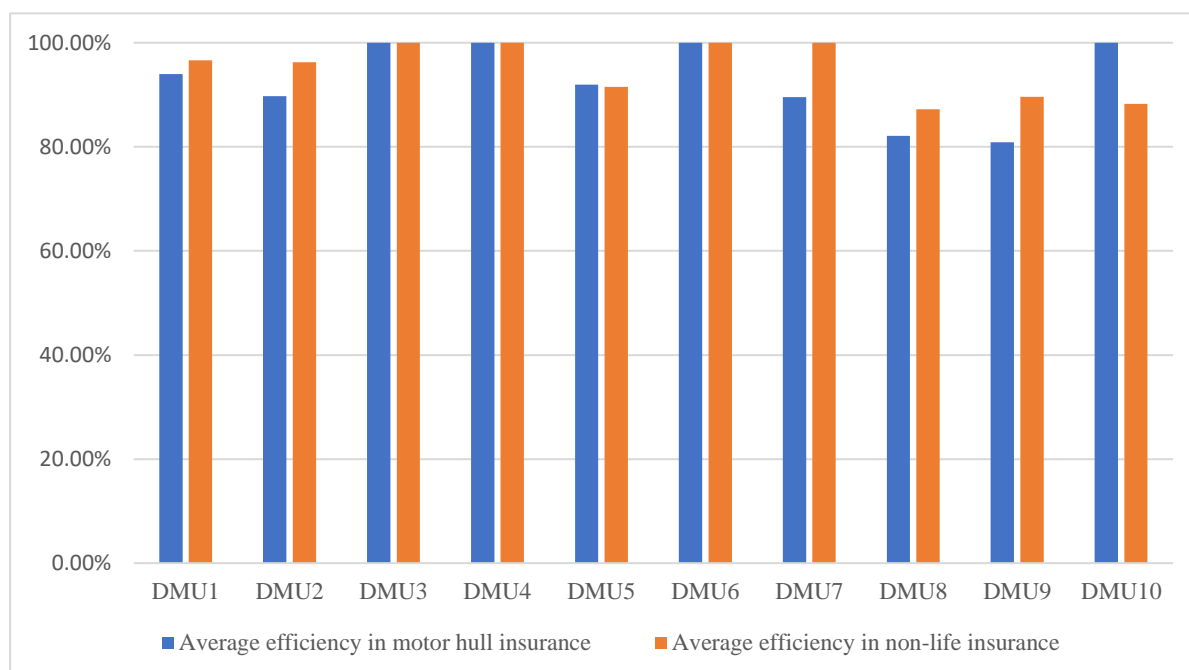
*Table 5. Efficiency of insurance companies in motor hull insurance from 2016 to 2022
 (Source: author's own work)*

<i>DMU</i>	<i>Average efficiency in motor hull insurance</i>	<i>Average efficiency in non-life insurance</i>	<i>Average share in the motor hull insurance premium</i>	<i>Average share in non-life insurance premiums</i>
<i>DMU1</i>	93.99 %	96.65 %	11.34%	11.39%
<i>DMU2</i>	89.74 %	96.22 %	10.32%	9.77%
<i>DMU3</i>	100 %	100 %	26.88%	30.72%
<i>DMU4</i>	100 %	100 %	21.51%	16.13%
<i>DMU5</i>	91.92 %	91.98 %	5.75%	6.76%
<i>DMU6</i>	100 %	100 %	1.96%	2.19%
<i>DMU7</i>	89.54 %	100 %	5.18%	3.05%
<i>DMU8</i>	82.08 %	87.23 %	6.52%	5.98%
<i>DMU9</i>	80.89 %	89.64 %	5.05%	5.48%
<i>DMU10</i>	100 %	88.27 %	4.49%	5.60%

*Table 6. Average efficiency and average shares in motor hull and non-life insurance premiums per insurance company in the period from 2016 to 2022
 (Source: author's own work)*

The average share of insurance companies in the total earned premium in the Republic of Croatia shows that DMU 1, DMU 2, DMU 3 and DMU 4 together realize 70.05% of the total earned premium. According to the BCC model, DMU 3 and DMU 4 achieved full efficiency in all years, while DMU 1 achieved full efficiency in three years.

Other insurance companies have a total average share in earned premium of 29.95%. The average shares in the earned premium of DMU 5, DMU 7, DMU 8 and DMU 9 are above 5%, and DMU 6 has the lowest average share of 1.96%. DMU 8 and DMU 9 have the lowest average efficiency, and the result is a fall in efficiency in 2019 and a lower annual efficiency than the average efficiency of the market. The data from table 5 shows that four insurance companies are efficient during all periods, namely DMU 3, DMU 4, DMU 6 and DMU 10. Of the other insurance companies, DMU 1 achieved complete efficiency in three years, DMU 7 in two years and DMU 2 in one year. In the last analyzed year of 2022, apart from fully efficient DMUs in the entire period, DMU 1 and DMU 7 were also fully efficient. The highest average annual efficiency and the smallest number of inefficient DMUs were achieved in 2021. Individual analysis of the efficiency of insurance companies revealed the following trends. DMU 1 achieves an average efficiency of 93.99% during the observed period. It achieves full efficiency in three years, in 2018, 2020 and 2022. Despite fluctuations in efficiency in 2017 and 2019, the company maintains stable efficiency. This suggests the company's continuous efforts in maintaining high standards of operational efficiency. The efficiency index at DMU 2 shows variability during the period. Despite this, the company maintains relatively high efficiency. The biggest fall was recorded in 2019, but after that, an increase in efficiency is achieved, especially in 2021. This may indicate adjustments in strategy or operational processes to improve efficiency. DMU 3, DMU 4, DMU 6 and DMU 10 are fully efficient throughout the period making them industry leaders during the observed period. The result is consistency in delivering high performance and stability in results suggests consistent excellence in operational processes. DMU 5, DMU 7 and DMU 8 with the lowest efficiency in 2019 have variability in the efficiency index. Despite this, DMU 5 and DMU 7 improve their efficiency, with the realization of full efficiency in 2021, and DMU 7 achieves full efficiency in 2022 as well, which indicates the ability to adapt and improve business processes within the organization. DMU 9 has an average efficiency of 80.89% and the lowest average efficiency among insurance companies. Through the observed periods, it achieves efficiency ranging from the lowest efficiency in 2019 of 52.46% to the highest efficiency of 92.31% in 2021.



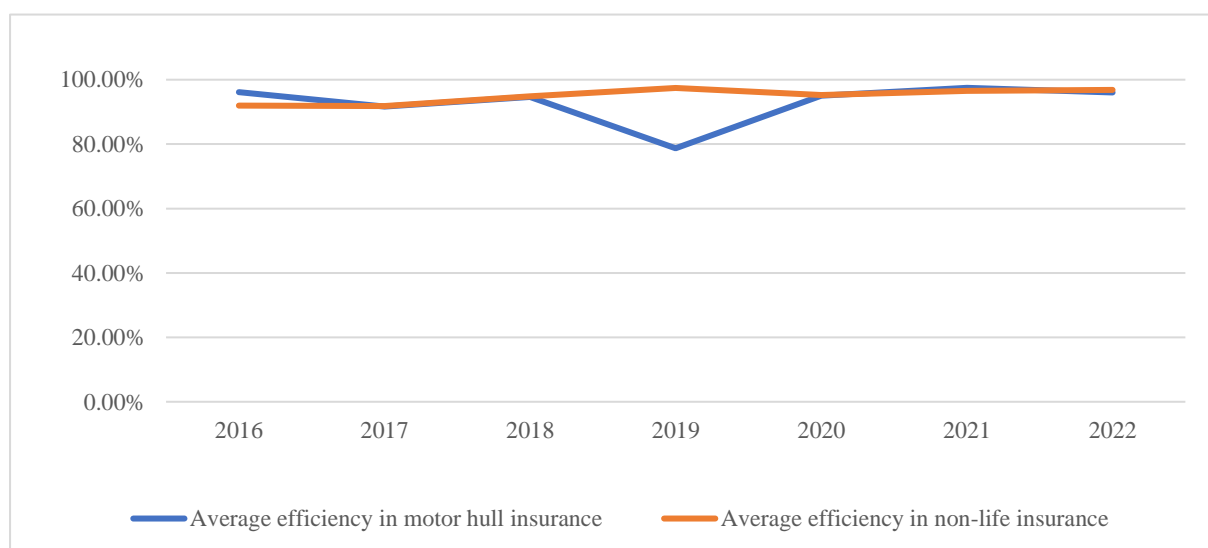
Graph 1. Comparative presentation of average efficiency in motor hull insurance and non-life insurance by insurance companies in the period from 2016 to 2022.
 (Source: author's own work)

Complete efficiency in motor hull insurance and non-life insurance was achieved by DMU 3, DMU 4 and DMU 6. The average efficiency of other DMUs in motor hull insurance is below the average efficiency of non-life insurance, except for DMU 10, which achieves complete efficiency in motor hull insurance. DMU 7 is completely efficient in non-life insurance, while in motor hull insurance the efficiency is lower of 11.73%. An additional analysis of trends in total average annual efficiency was made for non-life insurance. This made it possible to compare trends in total annual average efficiency in motor hull insurance and non-life insurance. The efficiency analysis for non-life insurance was made for the same insurance companies, and based on that, was calculated the annual average shown in table 7.

Description	2016	2017	2018	2019	2020	2021	2022
Motor hull insurance	96.18%	91.67%	94.62%	78.70%	95.04%	97.47%	96.02%
Number of efficient DMUs per year	6	4	5	4	5	6	6
Non-life insurance	91.96%	91.82%	94.87%	97.43%	95.20%	96.57%	96.83%
Number of efficient DMUs per year	4	4	5	5	5	5	6

Table 7. Average annual efficiency and number of efficient insurance companies in motor hull insurance and non-life insurance from 2016 to 2022
 (Source: author's own work)

Table 7 illustrates that the highest average market efficiency in motor hull insurance was achieved in 2021. The annual frequency of the appearance of efficient insurance companies is in the interval from 4 to 6, whereby the highest efficiency and the largest number of efficient insurance companies were achieved in 2016, 2021 and 2022. The efficiency ratings of other insurance companies were below 100%, which suggests that 4 to 6 insurance companies were not fully efficient every year. In relation to the annual average efficiency of non-life insurance, the most significant difference in efficiency is in 2019 and amounts to 18.73%. and 4.22% in 2016, while in other years the difference in efficiency is less than 0.90%.



Graph 2. Comparison of trends in average efficiency in motor hull insurance and non-life insurance from 2016 to 2022
 (Source: author's own work)

The graph illustrates trends in the average annual efficiency of motor hull insurance and non-life insurance. In 2019, the most significant difference is in efficiency, so in the case of motor hull insurance, the efficiency value of 78.81% was reached, while in the case of non-life insurance, the efficiency was at 97.43%. After that, there is a noticeable trend of uniform efficiency in motor hull insurance and non-life insurance. Since 2019, the difference in efficiency between observed insurances has decreased, and in 2022, the efficiency in non-life insurance was 0.81% higher than the level of efficiency in motor hull insurance with the same number of efficient insurance companies.

5. CONCLUSION

This paper analyzes the efficiency of Croatian insurance companies in motor hull insurance. The inputs used in the research are business expenses and expenses for insured cases, while the output is the earned premium. In the observed period from 2016 to 2022, the process of consolidation of the Croatian insurance industry was under way, which reduced the number of insurance companies from this insurance segment from 13 to 10. Data were collected for 10 active insurance companies in motor hull insurance. In accordance with the researched literature, the analysis was conducted using the DEA method with the application of the input-oriented BCC model. According to the results of the average annual analysis in motor hull insurance, the efficiency follows the trends in the efficiency of non-life insurance, with a significant decrease in the average annual efficiency in motor hull insurance recorded in 2019 and an increase in 2020 above the level of efficiency from 2018. On the insurance market, 4 to 6 insurance companies achieve complete efficiency. In the last observed year, the efficiency of motor hull insurance is approximately equal to the efficiency of non-life insurance with the same number of efficient insurance companies. On the motor hull insurance market in the Republic of Croatia, four insurance companies have an average share of 70.05%, of which two insurance companies have an average share of 48.39%. Other insurance companies have a share of 29.5%, with the share of four insurance companies exceeding 5%. Four insurance companies achieve full efficiency in the entire period, and two of them are insurance companies with a significant share of the motor hull insurance market, which makes them industry leaders during the observed period. In the last analyzed year of 2022, apart from fully efficient insurance companies in the analyzed period, only DMU 1 and DMU 7 were fully efficient. The highest average annual efficiency and the lowest number of inefficient insurance companies was achieved in 2021. Of the insurance companies with lower average shares in the total earned premium, two insurance companies were efficient in all observed years. The research limitation is reflected in the fact that insurance companies do not show investment costs and investment income from motor hull insurance in their financial statements. For this reason, these variables could not be included in the analysis. Future research can be focused on the analysis of the efficiency of other types of insurance in the composition of non-life insurance in the Republic of Croatia. Furthermore, it is possible to analyze the efficiency of motor hull insurance in the countries of the European Union and compare the levels of efficiency between countries.

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EUROPEAN PUBLIC POLICY AND E-INCLUSION: A QUALITATIVE COMPARATIVE ANALYSIS

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ABSTRACT

The purpose of the research reported in this paper was to analyze the implemented public measures effectively used by different stakeholders to prevent generation digital divide in five most successful European Union member states. The time period studied was until 2019 when the selected member states have shown surprisingly low e-inclusion rates of their respective populations above the age of 54. The methodology utilized was based on Qualitative Comparative Analysis (QCA) combined with the General Theoretical Conceptual Model of e-inclusion (RM-1)) that is applied to public policy documents. Principal results from this research are review of specific public measures supporting the developing conditions for implementing constructs and attributes of General Theoretical Conceptual Model of e-Inclusion in successful European counties by e-inclusion rate of 54+ population. The main conclusion based on research results is that proactive and supportive society by public policies focused on e-inclusion of vulnerable population can support faster acceptance of e-services that are results of digital transformation process.

Keywords: *e-inclusion, digital divide, digital transformation, public policies, qualitative comparative analyze*

1. INTRODUCTION

The Digital Transformation of public and commercial services and goods is emerging as an imperative of current European public policies. From the developers' and investors' perspectives, the transformation of digital processes is not a concern. Nevertheless, from users' perspectives, particularly those of vulnerable sections of population, it is a challenge. The low rate of e-inclusion of the 54+ population generates a risk of insufficient e-service consumption since there is a possibility that the e-services created throughout the digital transformation process will not be used as much as the investor expects. Based on this, the authors identified e-inclusion as an important topic for research. According to Eurostat's e-society statistics, North European countries have advanced more quickly in their population's e-inclusion than other parts of Europe during the past twenty years. Public actions and policies to achieve such achievement in the e-inclusion rate of the 54+ populations served as the authors' motivation for studying exactly what those successful countries have done to reach such success in e-inclusion rate of 54+ population. The remainder of this paper is organized as follows: following the Introduction, the authors provide a Review of previous research, focusing mostly on specifying research methodology.

The Review then analyses whether the methodology chosen for this study is appropriate. The methodology and sample are described in the section that follows. Drawing on these empirical results a discussion of the research findings is presented and the paper concludes with a statement of theoretical and policy contributions.

2. LITERATURE REVIEW

In this section, the authors present an overview of the consulted literature related to usage of the Qualitative Comaparative Analyse (QCA) method in public policy research. Table 1 shows relevant and recent sources in the field of the QCA method application in public policy research with a brief description of the considerations and conclusions of the research.

Reference	Consideration and conclusion of research
De Meur, Bursens and Gottcheiner (2006)	Application of MSDO (Most similar different output)/MDSO (Most different similar output) QCA in public policy analysis, suitable for use with small samples where conventional statistics are not applicable.
Ragin (2006) and Ragin (2008)	Ragin defines QCA as a method that serves to connect qualitative and quantitative analyzes in the field of social research, regardless of the sample size (from 5 to 50). QCA contains tools for analyzing the complexity of causal relationships. Depending on the research subject, a research sample of 5 to 50 is considered a rough number of cases that researchers could follow and compare in parallel, which is too small for most conventional statistical methods. QCA is based on the analysis of established relationships, not necessarily on correlations. The author Ragin (2006) concludes that the key goal of social research is to understand the variety of empirical cases that are compared with the researchers' theoretical ideas about social phenomena.
Rihoux (2006)	Analyzes the availability of software support for QCA methods.
Berg-Schlosser, De Meur, Rihoux, Ragin (2009)	The authors explain the typology of comparative analysis according to the sample size and the number of variables. For small samples, it is recommended to compare the number of cases by n variables that are predefined.
Vink and Van Vliet (2009)	Multi value QCA (mvQCA) where the number of possible values for a certain condition is theoretically determined, and this number is greater than 2. The values can be expressed in several ways: numerically (ordinary scale), descriptively (e.g., marital status, entry of academic education, geographical location, traffic light colors). This description of variables is especially necessary for qualitative research.
Schneider and Wagemann (2010)	The research provides an overview of the key features of the QCA method, the development of the method, and emphasizes the complexity of the conditions of necessity and sufficiency (causes), which are the backbone of the method.
Schneider and Wagemann (2010a)	The paper proposes standards of good practice in the application of QCA and fuzzy sets. The recommendations are grouped into three categories, namely: criteria related to the research phase before, during and after data analysis, and ensure transparency in the research.
Basurto and Speer (2012)	Fuzzy set QCA (fsQCA) where for a certain condition there are several gradations of possible values between 0 and 1 that indicate different degrees of satisfaction of the condition.
Blackman, Wistow and Byrne (2013)	The paper concludes that the method provides a basis for qualitative consideration of the complexity of policy problems where comparison between cases leads to similarities.
Schneider and Rohlfing (2013)	The issue of combining the QCA method and other methods in the Pre-QCA and Post-QCA phases is addressed.
Thiem and Duša (2013)	Overview of software support for QCA methods analyzing the development of software tools for QCA in the period 2003 to 2007.
Verweij (2014)	Overview of the area of application of the QCA method and its advantages compared to other methods.
Cacciatore, Natalini, and Wagemann (2015)	Application of the method for clustering countries according to the degree of adopted national reform programs that are in some way conditioned by the very membership in the EU, which was translated into conditions.
Gonzalez-Loureiro Dabic, Furrer (2015)	In the introduction, the authors analyze relevant works in which researchers emphasized the importance of qualitative research in the field of strategic management, precisely because it is possible to describe, investigate and predict observed phenomena based on the analysis of known cases.
Lalić Novak (2015)	The author discussed the historical development of the application of the comparative analysis method in the field of public administration. The purpose of comparative research is to find common features or differences through empirical research. The purpose of

	comparative research can be: Description of the research subject, which is an integral part of the research process and serves as a basis for explanations and generalization of conclusions regarding the research subject; Classification or grouping of many different descriptions of research subjects into simpler categories with common characteristics; Explanation of what is described and classified with the aim of recognizing the factors influencing cause-effect relationships; Prediction based on generalization of knowledge.
De Block and Vis (2017)	Review paper - study of 22 cases of application of the QCA method. In the mentioned paper, the authors dealt with the questions 1) which qualitative data to use; 2) how to determine the thresholds for inclusion/exclusion from the set; 3) how to establish the degree to which a case is included in the set or not included; 4) how to distinguish those concepts that are really missing from those that were not mentioned in, for example, the interview; 5) what type of sensitivity test to perform to assess the robustness of results based on qualitative analysis; 6) how to present the calibration procedure transparent and clearly.
Simister and Scholz (2017)	The authors applied the method in the context of observing the causes of changes in complex systems (eg collapse of military regimes, use of research by policy makers, improvement of survival rates in hospitals after operations...) in monitoring changes and evaluation.
Pattyn, Molenveld and Befani (2017)	The authors deal with the application of the QCA method in the evaluation process. The authors state that in the context of evaluation, the term "outcome" is defined by determining constructs such as "effect" or "influence" of certain characteristics (conditions). Also, the authors, relying on set theory, point out that QCA provides opportunities for identifying (configuring) states that are sufficient and/or necessary to achieve a certain outcome. The necessity and sufficiency of fulfilling the conditions is often the subject of evaluation.
Thomann and Maggetti (2020)	The authors deal with the inference process during the application of the QCA method. They start from a conclusion from an analyzed series of cases (population sample) in which external validity is established and clarified, in other words, it confirms the general validity of the conclusion related to the research question, which is valid for a large number of relevant cases. The selection of cases plays a key role in reaching a conclusion, because due to the limitation of the selection, there may be a generalization that we find in the literature under the name "limited" or "contingent". Another important component of the inference process is internal validity, which should confirm whether the observation includes cases that have a high degree of similarity within the components of the model, i.e. the attributes used to describe the components. The third component of inference is making the connection between data and reasoning.
Fainshmidt, Witt, Aguilera and Verbeke (2020)	The authors address the advantages and disadvantages of QCA. The advantages mentioned by the authors of the paper are: - a small sample, - it is suitable for determining multi-criteria conditions that are the cause of a certain state of the system at the output; equality of different combinations of causes, - there is a possibility of asymmetry of causes, which means that failure to fulfil the given conditions or fulfilment of the conditions can give the same outcome, - reduction of the number of conditions, i.e. simplification, which follows from the previous property of the method, is possible, - possible configuration (fsQCA) which enables flexibility in application and better expression of satisfaction of a certain condition. Disadvantages: Limitations of the method are data calibration, which can support, but also reduce the validity of the results; QCA usually focuses on the sufficiency of the fulfilment of the conditions, and not on the necessity, because it is not necessary that a certain condition is valid in all observed cases, but it is possible that it is decisive in some cases; by increasing the number of conditions, the results of the QCA method become more complex; QCA is not a statistical technique for testing hypotheses in terms of a population sample; formulating hypotheses about configurations of causal conditions is a challenge.
Mello (2021)	A comprehensive description of the development of the method over time, from the time it was designed by the creator Ragin (2006) (2008), until today. Based on numerous examples from practice, the author clarifies and gives recommendations for the diverse application of the QCA method in social sciences, including political science, sociology, law, public policies, environmental management, political geography and international relations. The key feature of the method is that it identifies the conditions of comparison and, based on them, determines the similarities and differences of the object of comparison. The author explains the importance of defining the set, that is, the comprehensiveness of the sample, which is necessary for the consistency of QCA application.

Table 1: Chronology of application of the QCA method in public policy research of the table
 (Source: Zdjelar, 2022.)

3. METHODOLOGY AND SAMPLE

The fundamental components of the Qualitative Comparative Analysis (QCA) approach can be seen as both a method and a research strategy, or methodology (Berg-Schlosser, De Meur, Rihoux, Ragin, 2009). Since it enables the creation of a "bridge" between the presentation of

qualitative and quantitative research findings, QCA is recognized in the field of social research. The books Landman (2008), Landman & Carvalho (2016), and Mello (2021), as well as scientific articles that look at particular specific aspects of the QCA application are among the relevant literature consulted for the purposes of developing the methodology of this research related to it. An overview of these articles is provided in previous literature review (Table 1.). A key characteristic of QCA is that it is based on set theory and the fundamental requirements (necessity and sufficiency) for belonging to a particular individual in a set. Since sample size directly affects whether specific standards can be used or not, as noted by Berg-Schlusser (2009), the complexity of applying the method increases with sample size. It is difficult to understand, apply or extend real-world phenomena without well-founded theories; theories cannot be created without proper classification, and the classification cannot be done without a good description, according to Landman (2008), who also explains the need to apply mixed methods in the field of political science, that is, in the field of policy analysis. This makes a logical sequence of steps for choosing research methods in the field of policy research, i.e. in the field of political science. The application of comparative qualitative analysis is used in this research to identify best practices based on the experiences of nations that have achieved a significant proportion of the 54+ population e-inclusion. The components of The Proposed General Theoretical Conceptual Model of E-Inclusion (Žajdela Hrustek, 2015) (RM-1) model, used to classify notes based on qualitative analyses of documents related to public policies but applied practically to a smaller sample, serve as the foundation for comparison. If a macro analysis of several countries was to be performed, the very nature of this research on public policy would not produce the desired results. In this paper, the QCA method has been applied to analyse country initiatives and policies with the aim of confirming best practices and causal mechanisms that led or could lead to a high level of e-inclusion of 54+ (Schneider and Rohlfing, 2013, page 561). By applying the QCA method and a detailed review of public policies, an effort was made to determine which measures were implemented and which could have an impact on increasing the percentage of e-inclusion of the 54+ population in the following countries: Sweden, Denmark, the Netherlands, Finland and the United Kingdom.

3.1. Calibration

One of the more recent works by Mello (2021) describes data calibration techniques, which is a prerequisite for the QCA application. Through the calibration procedure, the original data recorded in the case analysis should be converted into a specific value from a given set of values that reflect the fulfilment/non-fulfilment of a certain condition (English crisp set) or a certain level of fulfilment of the condition (English fuzzy set). Below is a brief explanation of the key features. While in the case of the crisp set, the fulfilment of the conditions is described by binary values (0 or 1), in the case of the fuzzy set (the "soft" set) there may be several values, and depending on the needs, they may be divided into several precisely determined values, such as (1; 0.7; 0.3; 0), (1; 0.7; 0.5; 0.3; 0), (from 1; 0.9; 0.8; to 0.1; 0) or they can be continuous (1; $0.5 < x_i < 1$; 0.5; $0.5 > x_i > 0$; 0). Demonstrating the fulfilment of conditions can be done in several ways, for which there are the following techniques Mello (2021):

- "Crisp set" (csQCA) for a certain condition means that the value 1 satisfies the condition, 0 does not satisfy the condition "set of multiple values" (Eng. multi value QCA (mvQCA)) predicts several nominal values for a certain condition (for example, the colour system on a traffic light)
- "Fuzzy set" (Eng. fuzzy set QCA (fsQCA) where for a certain condition there are several gradations of possible values between 0 and 1 that indicate different degrees of condition satisfaction.

For the purposes of the QCA in this paper, the "fuzzy set" (Fuzzy set QCA) will be used.

The presentation of the modalities for defining the conditions is adapted according to Verweij (Verweij, 2014, page 20): 1=completely in the set; 0.7=more in the set than outside the set; 0.3=more is outside the set than in the set; 0=completely out of set.

3.2. Defining set

Furthermore, establishing the set—that is, the comprehensiveness of the sample—is a crucial stage in the QCA application according to Ragin (2006) and Mello (2021), since it is required for the application consistency. The concepts of consistency and coverage in the application of this method are equivalent to the level of significance and power of a test, for the calculation of which a minimum of data is required in order to apply the conventional statistics, which is not the case in this research.

3.3. Truth table

In a binary model, the truth table has $2n$ possible outcomes where n =number of variables. For each variable (constructs of the RM-1 model presented in the next subtitle), it will be observed whether there is a strategic plan and/or an action plan and whether the implementation has been carried out or the results have been achieved ($2^2=4$ possible combinations). Each combination ultimately has a certain value defined in the previous step. Depending on the fulfilment or non-fulfilment of the conditions, the variable takes on values from the calibrated set of values described in the previous step. Thus, in this research, the following scoring model will be applied: the variables will take values from the given fuzzy set in the range 0; 0.3; 0.7 or 1. (Table 2.)

Strategic / Action plan	Execution (Report)	Result	Description: "The planning measure was.."
1	1	1	implemented according to the rules of strategic planning
1	0	0,3	planned, but not implemented
0	1	0,7	not planned, but it was implemented
0	0	0	the measure does not exist

*Table 2. Scoring system for JP assessment and measures for QCA
 (Source: Zdjelar, 2022).*

3.4. Source data matrix

The original data matrix presented in (Zdjelar, 2022) as Appendix 15.5. shows the artefacts that justify a certain decision of the researcher when evaluating the satisfaction of the given condition. The analysed documents are primarily reports based on which the existence of a strategy, an action plan for certain initiatives and policies is determined, as well as reports on the implementation of strategies and plans. The drafted notes contain information about the time when a certain public policy was current and if that information is stated in the original document. In addition, the following data are also recorded during the analysis:

- talks about the timeliness of recognizing the impact of the risk of digital exclusion of vulnerable population groups on general development (years),
- adoption of public policies aimed at solving the above-mentioned issue,
- the introduction of planned public policies, i.e. measures that influence the improvement of the situation,
- monitoring the results and reporting on the implemented measures and checking the results,
- the extent to which the measure was targeted at certain social groups, and especially at the adult population (elderly persons, pensioners, elderly workforce, etc.).

Based on these rules, a data matrix was defined, which is grouped by 4 components of RM-1, Access (4 attributes), Usage (7 attributes), Empowerment (4 attributes), Impact on quality of life (9 attributes). During the analysis, information indicating measures aimed at the 54+ population or other population groups showing all or some of the characteristics thereof (sensitive groups such as persons with disabilities, low-educated individuals, people with employment barriers, inactive individuals on the labour market, ethnic groups with cultural differences and language barriers, etc.) were additionally evaluated. Hereafter the introduction to e-inclusion at the level of the European Union and the United Nations will be presented, followed by the development and the situation in the top five EU member states that have the lowest rate of digital exclusion of the 54+ population. As afore mentioned, it is necessary to determine the common factors the five countries with extremely high percentage of e-inclusion of the population 54+ share, while other countries lacked in the same period. Moreover, at the time of the creation of this work, the growth in some countries remains slow and the situation is still far below the European average. The QCA method allows two distinct paths for directing the present research: a) comparison of similar countries according to as many variables as possible, except the independent variable and b) comparison of different countries according to an independent variable where they are similar and different according to other variables. In this paper, a comparison will be made of five countries that are similar in terms of a high % of e-inclusion of the 54+ population, and are different in terms of other variables (political structure, inclusion/non-involvement in the EU, language, culture, economic characteristics such as national income per capita ...). The results of comparative analysis are described in the following chapter of this paper.

4. EMPIRICAL FINDINGS

As stated in the description of the research methodology in previous section of this paper, in order to achieve objective 1 - identify the factors that have an impact on 54+ population e-inclusion (O1), it is necessary to define the key artefact requirements (Johannesson and Perjons, 2014) for the identification of constructs and attributes, which have proven to be important for the e-inclusion of the 54+ population. The focus of analysis will be the policies and initiatives of the 5 EU countries that are near the top of the ranking and the 5 that are at the bottom of the ranking. The QCA method was used in the following manner: data preparation performed a comparative analysis of EU member states with the highest rate of e-inclusion 54+ compared to other countries according to EUROSTAT data for 2018. The method was applied partially, given that the sample being analysed does not meet all the requirements of the method, especially the part related to statistical standards. The Grounded Theory Method (GTM) (Charmaz, 2006) was used for the systematic creation of memos, notes and observations during document analysis, whereby the notes were uniquely marked. The key to this work is the identification of important details from the documents that were the subject of analysis and their association with RM-1 constructs. The results of part of this phase identified key measures, grouped by RM-1 components, common to all countries whose public policies were the subject of analysis, and which resulted in a higher percentage of 54+ population e-inclusion. The economic strength of EU countries expressed by GDP per capita for the 2010 - 2019 period was adapted from work presented by Zdjelar (2022, Table 32). The index comparing GDP per capita with the European average of 2010 and 2018, also presented by Zdjelar (2022, Table 33), compares indicators for 2018 - GDP per capita, AAI, DESI and % of people aged 55 to 74 who had never previously used the Internet. At the time of this analysis, not all indicators for 2019 were available, and for this reason, data for 2018 was used for the analysis. The first author had previously conducted a classification according to the four aforementioned criteria and determined the leading countries and the countries that have the worst ranking according to the aforementioned four criteria in order to determine good practice.

Identifying whose policies and actions should be the focus of analysis is the aim. The nations at the very top of the ranking should serve as guidelines for defining the fundamental components of good practice. The examination of the nations at the bottom of the scale, on the other hand, should reveal if these nations planned and carried out the same policies that clearly did not provide the desired outcomes, or if there was another influencing factor. For each criterion, it was determined which countries are in the first 6 best places and the last five places. The following table highlights the five most advanced countries. Three countries met all four criteria and are among the top 6 countries among EU member states for each of the criteria. These are: Sweden (ranks: GDP=4, AAI=1, DESI=1, e-inclusion 54+=3), Denmark (ranks: GDP=3, AAI=2, DESI=3; e-inclusion 54+=1) and the Netherlands (ranks: GDP=5, AAI=3, DESI=4; e-inclusion 54+=2). Furthermore, two countries meet 3 criteria and are in the top 6 for those three criteria. These are Finland (ranks: GDP>6, AAI=5, DESI=2; e-inclusion 54+=5) and United Kingdom (ranks: GDP>6, AAI=4, DESI=5, ; e- inclusiveness 54+=5).

	Country	Number of fulfilled criteria in first 5 places	Rank total
1.	Sweden	4	9
2.	Denmark	4	9
3.	Netherland	4	14
4.	Finland	3	12
5.	United	3	15

Table 3. EU countries that according to the criteria of GDP per capita, AAI, DESI and % of the population 54+ who have never used the Internet are among the last 5 in the EU (year 2018) (Source: Zdjelar,2022)

Based on the obtained data, it was necessary to conduct QCA for the countries: Sweden, Denmark, the Netherlands, Finland and the United Kingdom with the aim of determining the best practice. In the following table, the bottom five countries according to the given criteria are highlighted.

	Country	Number of fulfilled criteria in last 5	Rank total
1.	Romania	4	101
2.	Poland	4	95
3.	Greece	3	84
4.	Bulgaria	3	82
5.	Croatia	3	78

Table 4. EU countries that, according to the criteria of GDP per capita, AAI, DESI and % 54+ of the population that have never used the Internet, are among the last five in the EU (year 2018) (Source: Zdjelar, 2022)

The five countries at the bottom of the ranking list are Romania, Poland, according to all four criteria, and Greece (according to GDP it is in 19th place out of 28), Bulgaria (according to AAI it is in 22nd place out of 28) and Croatia (according to DESI it is 21st place out of 28) are in the last places according to three criteria. Before further considerations, and then to the issue of demographic trends, the trend index of the estimated number of inhabitants by age group for 2020 and 2050 according to the UN for the ten countries mentioned is given below.

	Index 2050./2020. Based on estimation of population by ageing groups according to UN					
Age groups	0-14	15-54	55-59	60-69	70-79	80+
Bulgaria	74,40	66,13	75,13	87,18	102,02	132,00
Croatia	70,79	70,62	73,78	85,84	120,34	151,42
Denmark	104,52	101,26	105,91	99,36	105,45	218,22
Finland	87,38	92,84	99,89	95,71	97,67	194,32
Greece	73,73	68,61	72,29	98,89	139,83	159,89
Netherland	91,74	89,63	87,28	95,17	116,56	236,99
Poland	74,47	69,12	98,99	102,32	146,05	194,45
Romania	78,48	70,58	93,92	87,07	139,65	149,39
Sweden	103,03	103,99	124,69	119,86	112,47	201,44
United Kingdom	96,36	99,15	101,68	123,33	126,34	204,83

Table 5. Index of estimation of population for 2020 and 2050 by age groups (Source: UN, World Population Prospects - Population Division - UN, available at <https://population.un.org/wpp/Download/Standard/Population/>, accessed on August 22, 2021)

From Table 5., an increase in the population aged 70+ was observed for all countries. Denmark and Sweden are the only countries that have a trajectory of population growth in all age groups (with Denmark, the exception is the estimate of the population aged 60-69, although it could be said that according to the estimate, the number will remain the same). The mentioned population group is crucial for the beginning of more intensive use of social rights, which in every country requires prioritization in the creation of public policies. Bannier, Glott and Meijs (2013) have cited other research that support their grounded theory; for example, Sapir (Sapir, A.: Globalization and the Reform of European Social Models. JCMS c44(2), 369–390 (2006)) who divided Europe into five clusters according to socio-cultural context and model of care: Continental system (Belgium, France, Germany, Luxembourg, Netherlands, Austria), Scandinavian system (Sweden, Denmark, Finland), Anglo-Saxon system (United Kingdom and Ireland), the Mediterranean system (Italy, Spain, Portugal and Greece), the Eastern European model (the countries of Eastern Europe, Romania, Bulgaria, the former countries of Yugoslavia, and the Baltic countries). The above indicates symptomatically that the social dimension of public policies had quite an impact on the current results on the percentage of the population 54+ who have never used the Internet.

Table following on the next page

	Sweden	Denmark	Finland	Netherland	United Kingdom
State regulation	Constitutional monarchy	Constitutional monarchy	Republic	Constitutional monarchy	Parliamentary monarchy
Political system	Parliamentary system	Parliamentary system	Parliamentary system	Parliamentary system	Parliament and the Council of State have a formal advisory role
State institutions – Executive body	Government headed by prime minister	Government headed by prime minister	Government headed by prime minister	Government headed by prime minister, Council of ministries	The nominal holder of executive power is the Queen, and operationally the Government with the Prime Minister
State institutions	The king is the president of the country.	The king is the president of the country.	President	The king is the president of the country.	The queen/king
State institutions – legislative body	Unicameral Parliament	Unicameral Parliament	Unicameral Parliament	Bicameral Parliament	Bicameral Parliament
Territorial organization	20 districts and 290 municipalities	The kingdom is also made up of 2 autonomous countries in the Atlantic, none of which is an EU member: the Faroe Islands and Greenland.	19 regions and 70 subregions. Local authorities are distributed in 311 municipalities and cities.	It also covers 6 overseas countries and territories in the Caribbean (not part of the EU). Divided into 12 districts and 388 municipalities	4 countries: Britain, Wales, Scotland and Northern Ireland.

*Table 6. State organization, political system of the first five ranked countries
 (Source: Zdjelar, 2022)*

On the other hand, the group of countries at the bottom of the list have the common feature of being in the south-eastern part of Europe. Information about their government and political system can be found in the following Table 7. Romania, Poland, Bulgaria, and Croatia are nations that recently underwent transitions requiring substantial, severe reforms. Greece is the only one of the aforementioned nations to have been a member of the European Association of Nations since 1981, and unlike the other four, it has not recently gone through a transition process. Romania and Bulgaria joined the EU in 2007, Romania and Poland in 2004, and Croatia in 2013. Regarding the aforementioned, Croatia has made significant adaptation progress in a relatively short amount of time, especially in comparison to Poland, which has been a member of the EU for 17 years, or Bulgaria and Romania, which have been members for 14 years. As all five countries that are ranked highest are located geographically in the north of Europe, there are common historical and cultural characteristics of the five mentioned countries. In order to see the broader picture of the countries included in the analysis, below is a systematization of data on the state organization and political system (Table 5. and Table 6.).

	Romania	Poland	Greece	Bulgaria	Croatia
State regulation	Semi-Presidential Republic	Republic	Republic	Republic	Republic
Political system	Parliamentary system	Parliamentary system	Parliamentary system	Parliamentary system	Parliamentary system
State institutions – Executive body	Government headed by prime minister	Government headed by prime minister	Government headed by prime minister	Government headed by prime minister	Government headed by prime minister
State institutions	Predsident	Predsident	Predsident	Predsident	Predsident
State institutions – legislative body	A bicameral parliament consisting of the Chamber of Deputies and the Senate.	Two houses of parliament, Sejm and Senat	Unicameral Parliament	National Assembly	Unicameral Parliament – Parliament of Croatia
Territorial organization	41 districts and bucharest area	16 provinces	14 regions	27 districts and the City of Sofia	20 counties and the City of Zagreb

*Table 7. State organization, political system of the last five ranked countries
 (Source: Zdjelar, 2022)*

The presentation of initiatives, policies and implemented activities related to e-inclusion applies to EU countries that have best practices: Sweden, Denmark, the Netherlands, Finland, the United Kingdom. Below is a brief description of the QCA steps applied in this study. The categories that were followed in these initiatives, policies and implemented activities are components of RM-1, and they consist of: Internet access (PI1 to PI4), Internet use (KI1 to KI5), Empowerment (OS1 to OS4), Impact on quality of life (KV1 to KV9). The QCA technique applied in this study is fuzzy QCA, and the domain of values within which the levels of conditions fulfilment are predicted are described by the values: 1, 0,7, 0,3 and 0. The source of data are available reporting documents that allow visibility of public policies – strategies, action plans on the basis of which activities and reports on the implementation of the same were carried out in the 2000 - 2020 period; reports from scientific research related to the intended categories. The level of the administrative units whose public policies were analysed: Considering the different-read political arrangements and the role of different levels of public administration (national, regional, local) in this part of the research the focus is primarily on the national level. The analysis of the content of the report on the implementation of strategies, action plans and initiatives showed that mainly in all 5 countries the policy focus was on strengthening the digital skills of the population that could contribute to their engagement in economic terms. Although the targeted large number of measures were aimed at strengthening the digital skills of the working-age population, public policy makers were aware that such measures, in addition to allowing the reduction of unemployment, also have an impact on their private activities regarding the use of digital services, which added value to the invested public funds.

Table following on the next page

Condition	Title of condition	Sweden	Denmark	Netherland	Finland	United Kingdom
PI	Access to the Internet (PI)	4/4	3/4	3/4	3/4	4/4
PI1	Affordability	1	0	0	0	1
PI2	Network	1	1	1	1	1
PI3	Material access	1	1	1	1	1
PI4	Place of access	1	1	1	1	1
KI	Usage of Internet (KI)	4/5	4/5	4/5	4/5	4/5
KI1	Motivation	1	1	1	1	1
KI2	Intensity of usage	0	0	0	0	0
KI3	Skills	1	1	1	1	1
KI4	Social support	1	1	1	1	1
KI5	Engagement	1	1	1	1	1
OS	Empowerment (OS)	3/4	3/4	3/4	3/4	3,3/4
OS1	Creating the content	0	0	0	0	0,3
OS2	Networking	1	1	1	1	1
OS3	e-democracy	1	1	1	1	1
OS4	e-participation	1	1	1	1	1
KV	Impact on quality of life (KV)	7/9	7/9	7/9	7/9	8/9
KV1	e-communic.	1	1	1	1	1
KV2	e-culture	0	0	0	0	0
KV3	e-health	1	1	1	1	1
KV4	e-government	1	1	1	1	1
KV5	e-learning	1	1	1	1	1
KV6	e-work	1	1	1	1	1
KV7	e-commerce	1	1	1	1	1
KV8	e-banking	1	1	1	1	1
KV9	e-entertainment	0	0	0	0	1
	Total	18/22	17/22	17/22	17/22	19,3/22

Table 8. Scoring the top five European countries by components of RM-1
 (Source: Zdjelar, 2022 based on artefacts specified in Appendix 15.5)

5. DISCUSSION AND CONCLUSION

Applying the QCA method, it is possible to derive the following main conclusions about the five nations with the lowest percentage of people aged 54 and over who have never accessed the Internet. EU membership provided a framework for key global development goals, which proved to be correct except for Greece which has been in the EU since 1981, but does not show significant positive results even at the time of this research, a stable social political situation and EU membership provided a framework for key global development goals, which proved to be correct except for Greece which has been in the EU since 1981, but does not show significant positive results even at the time of this research, focus on the overall well-being and well-being of citizens, though prevalent across the EU, nevertheless had deeper roots in the top ranked countries and was introduced only more recently the case with the bottom ranked, identifying the risk of the effects of an ageing nation and finding measures to keep the 54+ population

active for as long as possible with the aim of reducing public costs (insurance and pension system) and increasing their personal well-being and standards (reducing the risk of poverty), early recognition of the role that digital literacy will play in the development of the information society, which has influenced the launch of targeted campaigns or promotional activities in order to raise awareness of the importance of the topic, investment in network infrastructure (broadband), investment in social infrastructure (equipment, personnel) that could have been a driver for spreading awareness of the need for digital literacy and e-inclusion of all age groups, especially among the vulnerable population groups (elderly people, low-educated people, people with language barriers, people with disabilities), connecting education systems, non-profit organizations, the economy in order to define competence standards (coordination role of public authorities), investment and participation in international scientific research projects on the topic of e-inclusion, which has enabled good practice to be tested within projects and to be applied more broadly in society. The above findings are consistent to prior research (cf. Sharma et al. 2010, 2016 & 2018) which adopted inductive reasoning to develop conceptual thinking around developing knowledge societies with digital inclusion policies. More specifically, from a grounded theory analysis of four city states, this line of research concluded that access, usage, participation and engagement are critical policy imperatives.

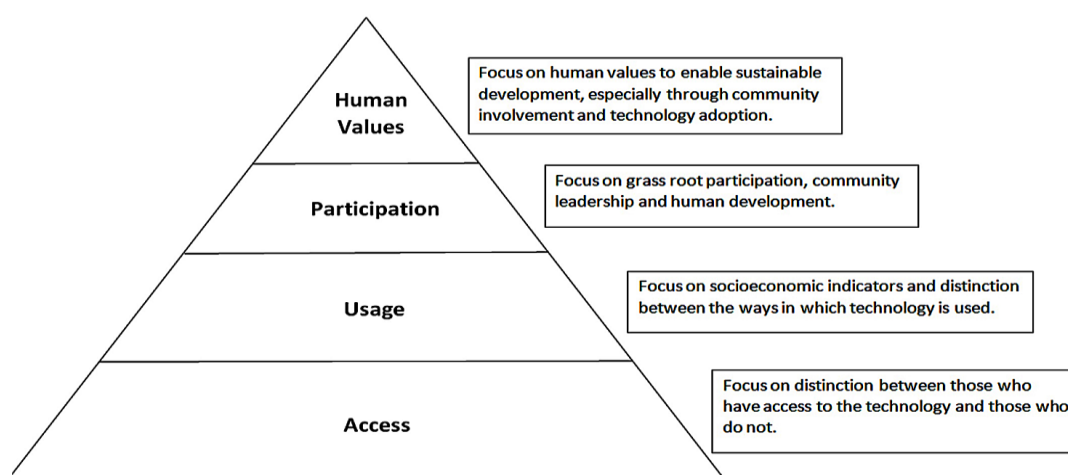


Figure 1. Levels of e-inclusion (Source: Sharma et al. 2018, p 2282)

The findings of this paper may be corroborated with what it now known as levels of digital development, e-inclusion being a fundamental component thereof. As shown in Figure 1, policies that promote digital access and usage are necessary but not sufficient conditions for digital inclusion. Such intended benefits of suitable infrastructure can dissipate if not followed through with what this paper refers to as social support. The participation of citizens aged 54+ and their engagement via digital means to create value for the community in terms of their skills, knowledge and experience will lead to socio-economic development. As a landmark UNESCO report stated in 2005 “Knowledge societies will not really be worthy of the name unless the greatest possible number of individuals can become knowledge producers rather than mere consumers of already available knowledge.” (UNESCO, 2005, p.189 cited by Sharma et al 2018). Indeed, a later report in 2013 highlighted the need for knowledge societies to be based on inclusion in order to ensure their sustainability. Hence, planning and implementing public measures focusing on e-inclusion of potentially disenfranchised segments of the population, such as senior citizens, is the most important prevention that assures avoiding the risk of generation digital divide as it is present in countries mentioned in Table 7. It does mean that those countries do not have positive progress in digital transformation.

Rather, it would be more inclusive if the results of digital transformation – like e-services offered to citizens - would be more universal and equitable if the vulnerable population segments were able to use and engage in them.

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DETERMINATION OF THE REAL ESTATE TRANSFER TAX BASIS IN RELATION TO DATABASE FORMATION

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ABSTRACT

Assessing the value of real estate is very important for all real estate owners in the Republic of Croatia, since Croatia is at the very top of Europe in terms of real estate ownership. In the real estate valuation process, there are several very important things to consider: the database on realized sales transactions, real estate exchanges, the leasing and letting of real estate, leasehold agreements and the right of easement. High-quality, professional, and accurate determination of the basis for real estate transfer tax assessment is a fundamental prerequisite for the collection of this tax, because it constitutes the framework for average prices on the real estate market and serves expert witnesses in the preparation of real estate value assessments when using the comparative method. The real estate database in Croatia (eNekretnine) was created after the Real Estate Valuation Act (Zakon o procjeni vrijednosti nekretnina, ZPVN), which prescribes and sanctions its binding use, entered into force. The existing database is not accurate due to the fact that the real estate values reported to the Tax Administration are reduced, because of the significant real estate transfer tax of 3% (at the time of the adoption of the real estate valuation regulation in 2015, the rate was 5%), a tax rate too high for such a small real estate market. Since Germany has a 3% real estate transfer tax, the damage to our state budget was significantly higher up until 2019 when the tax rate was reduced to 3%). A research study conducted in 2015, after the adoption of regulations on the valuation of real estate, up until today has shown that nowadays the price of real estate on the Croatian market is lower than in other countries in its immediate and distant surroundings. Any foreigner will therefore rather buy real estate here for a lower price than the equivalent real estate in their own country for a higher cost. The research study identified the potential and opportunities in which an accurate way of determining the tax basis would financially benefit the tax reform which would help in creating a sustainable database of realized transactions, in addition with an accurately calculated tax amount that would flow into the state budget in significantly larger amounts.

Keywords: *real estate, valuation, market value, database, real estate transfer tax.*

1. INTRODUCTION

According to the latest Eurostat data for 2021, property taxes make up 2.4 percent of the common GDP of the euro area (which accounts for 19 members since Croatia joined the area in 2023) and 2.2 percent of the common GDP of the EU. The Union generated EUR 4.44 billion in revenue from property taxes in 2021, EUR 492 million more than the year before, when EUR 3.95 billion was generated. Croatia taxes the property of its citizens, whether it be immovable or some other type of property, below the average of the EU and the euro area. These taxes account for 1 percent of GDP, and their share in total taxes amounts to 2.7 percent. The EU average however amounts to 5.4 percent, and the average of the euro area to 5.7 percent, in both cases slightly lower than the year before. In 2021, Croatia gained 561 million euros in revenue from property taxes, 36 million euros more than the year before. In 2021, there were 133,997 recorded sales worth HRK 60,085 billion, i.e. €7,974,782,686.40 (a 50.1 percent increase compared to 2020), meaning that €239,574,576.27 were collected from real estate transfer tax which was at a rate of 3%.

When taking into account that most of the reported tax bases were reduced by at least 20%, it means that no less than €47,914,915.25 could have been collected, which is not an insignificant amount. If we consider that the price of an average kindergarten with a total surface area of about 2,700 square meters, used by 12 educational groups, six nursery and six kindergarten groups, with a total of 200 children and 50 employees amounted to €10 million in 2023 - it means that we yearly lose almost 5 kindergartens or 4 retirement homes with a capacity for 200 users with an individual value of €13.1 million through so-called double contracts: the sales contract for the Tax Administration and the one between the seller and the buyer made in order to reduce the declared tax basis in sales contracts (the data on the price of an individual retirement home in 2023 was found on the Internet, there is a similar building being built in Dubrava, a city district in Zagreb). The Croatian real estate database (eNekretnine) started to form at the end of 2015, after the Real Estate Valuation Act (ZPVN) entered into force, prescribing and sanctioning its binding use. The database is formed on the basis of sales contracts reported to the Tax Administration with the purpose of tax compliance. These contracts are not verified by expert valuers/valuer bodies and therefore often contain purchase prices that are not in line with the real market prices. Not a single research paper in Croatia, out of all the publicly available ones dealing with the topic of real estate taxes, has conducted this type of research which aims to determine the credibility of presented and reported tax assessment basis, which was established by expert witnesses when using the so-called real estate database. The Real Estate Valuation Act (ZPVN) namely stipulates that the data in the eNekretnine database, which was taken over from the Tax Administration, should be evaluated by professional services officers of the county administrative bodies, the City of Zagreb, and large cities with the aim of filling the database. The "Register of purchase prices" should represent the core platform for users interested in the available data from the eNekretnine system. Furthermore, the reports on the state of the real estate market, which the Croatian Economic Institute in collaboration with the Croatian Ministry of Construction, Spatial Planning, and State Property issues annually, state the following: *"the data derived from the eNekretnine system which the Information Systems and Information Technologies Support Agency receives from the Tax Administration (and which was used in this paper to calculate the presented indicators) have certain flaws that cannot be rectified, which may to a lesser extent affect the value of the calculated indicators both at the state level and the level of local self-government. One of these flaws is the fact that the data retrieved from the eNekretnine system has not been evaluated by valuer commissions, meaning that their quality cannot be fully guaranteed"*. From 2015 until today, thousands of inaccurate pieces of data have been entered into the database because the data entry verification is not conducted by expert witnesses, as is the case in Bavaria, whose guidelines on the regulation on valuation we copied into our regulations to a high extent. Based on data, this paper aims to empirically establish the generally accepted fact that a high-quality database on realized transactions is a very important tool for every expert witness who wants to assess the market value of a real estate. It will be necessary to prescribe a new way of determining the tax basis and then processing - evaluating the data from each transaction so that, based on the numerous characteristics of each specific type of real estate, equivalent real estate can be selected for the use of the comparative method.

2. OVERVIEW OF EXISTING LITERATURE

The saying: "Nothing is certain but death and taxes" (Franklin, 1750), perhaps best shows us how important and present taxation is all over in the world. In the past ten years, tax and tax reform have often aroused the interest of citizens, property tax exists in all modern countries, with the vast majority of these countries guaranteeing private property, i.e. the right to property, in their constitutions, one of them being the Republic of Croatia as well.

Constant amendments to the Real Estate Transfer Tax Act and the Value Added Tax Act in the last few years have brought instability and uncertainty to the country's tax policy. On lower levels of government there has been non-uniform tax treatment, which of course lead to constant societal skepticism when new changes and reforms regarding taxes were announced. An Italian economist, historian, philosopher, and writer stated back in the 18th century "that taxation can lead to the decline of a nation in two ways. Firstly, if the tax burden exceeds the power of the nation and is not proportionate to the general wealth. Secondly, if the tax burden, although proportional to the overall power of the nation, is not well distributed" (Verri, 1760). The book "The Croatian Fiscal System" (cro. Hrvatski fiskalni sustav, Jelčić et al., 2004) shows which direct taxes are most important and make up the largest share in total tax revenues in Croatia – the value added tax, the real estate transfer tax, and special taxes on consumption (consumption or excise taxes). The second part of the book presents the tax procedure in Croatia, i.e. the procedure for determining and collecting taxes according to current legal regulations. In addition to legal regulations, the book also states the principles that must be respected when determining and collecting taxes. Since tax is a forced type of payment, it is stated how, according to the General Tax Act, human rights and freedoms are protected in the course of tax proceedings. Participants in tax proceedings and the competences of the tax authorities are listed in the book as well, and so are the authorities, principles, and types of inspection by which Tax Administration officials check all facts related to the calculation of taxes and other budget revenues outside the official premises of the tax authority. There are a number of articles and papers written by experts on the topic of property taxes in the EU, on the need to introduce real estate transfer taxes and the possible implications for Croatia. There is however an original scientific paper on real estate transfer tax titled: "Should Real Estate Purchase be Taxed in Croatia? – Citizens' Attitude" (Baljak, et al., 2018) in which the authors argue that "Real estate transfer tax is widely applied internationally, although it is one of the property taxes with a greater distorting effect than most other property taxes." The main goal of that research was to explore the attitudes of the population of the Republic of Croatia about this kind of tax, while the other goals included the influence of relevant demographic and economic variables on this attitude. The data was collected from May to September 2016 via a telephone survey across the whole country. The public opinion on some of the most important aspects of the tax system, including the opinion on the real estate transfer tax, was examined by random selection. The research conducted for this paper was related to the justification of real estate transfer tax. The authors wanted to determine the citizens' view on this problem, as well as the demographic and economic variables that influenced their stated views. The research was conducted on a sample of the population of the Republic of Croatia. The inductive (inferential) statistical model, which is based on the probability theory and allows conclusions to be drawn about the population with the help of samples from the population, was applied, followed by a statistical survey method and an econometric ordinal logistic regression. The paper's hypothesis was that the people would have a negative attitude towards this type of tax. "We assumed that this attitude would be influenced by various demographic and economic variables" (Baljak, et al., 2018). It was determined that the tax was approved by people living in urban areas and by those with a higher level of education. Negative attitudes were expressed by female respondents, people who had bank savings, and it was established that there was a regional influence as well (the population living in the South of Croatia had a more negative attitude towards this type of taxation). On the basis of the facts stated above, it was concluded with certainty that there is no distinct resistance of citizens towards this form of taxation, which points to the unhindered continuation of its existence and the collection of these revenues. The results of the population survey in the Republic of Croatia disproved the main hypothesis of the paper - the lack of support for the application of the real estate transfer tax by Croatian citizens.

However, a neutral response to the survey, including the lack of influence of other economic and demographic variables, points to the need to better inform citizens about this form of taxation, and for its critical analysis. On the basis of the facts stated above, the possibility was realized for further detailed research of individual elements of this tax form (e.g. the effects of lowering the tax rate, further movement of the rate, exemptions and reliefs, etc.)" (Baljak, et al., 2018). The research on the managing of the real estate database in Bavaria, Germany showed that they have a different way of assessing the value of real estate compared to all other EU countries precisely because of the long-term perfected organized way of collecting, processing data, and using their database. The formation of the database on purchase and sale prices in the Federal Republic of Germany began in 1954, was intensively worked on until 1960, and continued with the establishment of valuer commissions. In Bavaria, their tasks are regulated by the Regulation on Expert Witness Committees, which states they are bound to compile a collection of purchase prices and a plan of indicative land values in accordance with the provisions of Art. 199, paragraph 2 of the BauGB (first established in 1960). The valuer committee is an independent collegial body of the district administration, independent and not bound by the orders of the district or state administration. The members of the valuers committee are honorary expert witnesses who work on the real estate market, appointed by the representative body of the district administration for a period of 5 years. In the Republic of Croatia, depending on the circumstances, real estate sales are subject to value added tax or real estate transfer tax. In a real estate transaction, it must first be determined whether the transaction is subject to VAT payment. Only when it is established that VAT should not be paid in the transaction, is it clear that then the real estate transfer tax should be paid. If we study the Real Estate Transfer Tax Act (from the refined text of Official Gazette nr. 115/16, 106/18 in force from 01.01.2019), we will find some interesting information:

Certain notions in terms of this Act have the following meaning according to Article 4:

- 1) Real estate transfer shall refer to any acquisition of real estate in the Republic of Croatia (hereinafter: real estate acquisition)
- 2) Real estate acquisition shall refer to buying and selling, exchanging, inheriting, gifting, entering real property to and exempting it from a company, adverse possession, real estate acquisition in liquidation or bankruptcy proceedings, acquisition on the basis of a decision by a court or other authority, acquisition under law and other ways of acquiring real estate from other persons
- 3) Real estate shall refer to lands and buildings
- 4) Land shall refer to agricultural, building and other lands
- 5) Building shall refer to residential, business and any other buildings and their parts
- 6) Real estate market value shall refer to the price of real estate that is obtained or might be obtained on the market at the moment when the tax liability is incurred
- 7) Real estate acquisition document shall refer to any document, notarial act or a decision of the competent authority that results in the acquisition or transfer of ownership over the real estate in the Republic of Croatia.

3. RESEARCH METHODOLOGY

The data used in this research were collected across the Republic of Croatia and provided by expert witnesses who came across data that was not accurate and distorted the real market values of real estate settled on by voluntary buyers and sellers. The national database for real estate, eNekretnine, was also used in this research. This database is regulated by the Ministry of Construction, Spatial Planning, and State Property in accordance with the provisions of the Real Estate Valuation Act and the Rulebook on the Information System of the Real Estate Market.

eNekretnine is a module that is maintained in electronic form and is available on the Ministry's website, which provides conditions for accessing eNekretnine and for archiving and making backup copies of all data in the eNekretnine system for the time period determined by the Real Estate Valuation Act or other regulations. ISPU is an abbreviation for Spatial Planning Information System which was established in accordance with special regulations governing the area of spatial planning. It is the country's interoperable and multi-platform system for the input, verification, public publication, and exchange of spatial data for the purposes of the creation, adoption, implementation, and supervision of zoning plans, permanent monitoring of the state of territorial units and the area of spatial planning, the creation of reports on the state of territorial units, and the performance of business processes prescribed by the law governing the field of spatial planning, and special regulations. In the time period since the adoption of the Regulation on Real Estate Valuation, and the Rulebook on Real Estate Valuation Methods, i.e. from July 1, 2014 until today, during the implementation process, it became absolutely clear that the Real Estate Valuation Act was not written, but in fact copied, and then more or less successfully translated from German, although it was unenforceable in Croatia which has an unorganized real estate database. Furthermore, the majority of local and regional self-government units did not fulfill their obligations prescribed by the Regulation on Real Estate Valuation or the Rulebook on Real Estate Valuation Methods, resulting in the new regulations being poorly accepted in practice. The most common problem mentioned in practice was not of a methodological nature, but related to the availability and poor quality of necessary data. The regulations namely prescribed a methodology that requires the usage of certain data, which, at the time the regulations were being made, were neither available to valuers, nor was it known when they would be available. In the publications on reports on the real estate market in the Republic of Croatia for cities and counties issued from 2017 until today, it has been determined that the data on the unit price (kn/m² and €/m²) does not fully reflect the true state of the real estate market and may also depict inaccurate results for the following reasons:

- the data has not been fully evaluated,
- special parts (apartments, business premises, parking spaces) are not uniformly stratified in the

Republic of Croatia. In the contracts, both the real and calculated square footage is specified. Real estates are registered in the land register in the same way, and it is not possible to read and enter the real square footage for all real estates (in the evaluated data, for example, of the City of Zagreb, in the cell "surface area in traffic" the net useful area for apartments and business premises is recorded with the useful value coefficients used area from annex 1 of the rulebook).

- The overall statistics regarding apartments include apartments of lesser value (dilapidated, damaged in an earthquake, in shell condition) as well as apartments bought by war veterans on more favorable terms (unless their purchases were excluded under terms of "unusual circumstances" during the evaluation), which is why the actual average price greater than the one obtained.
- For family houses and office buildings is not possible to determine the actual living space based only on the sales contract, since only the plot area is recorded, but only in case the contracts were processed by the administrative and professional service,
- In the Zagreb area, the price of building land varies according to its location, allocation, construction possibilities, category, and other features; in rural areas the prices are lower, while in popular parts of the city the numbers are much higher; it is therefore not even possible to determine a price average, considering that the lands are incomparable with each other.

- it is not possible to analyze the market according to criteria other than those set by the competent ministry (e.g. according to the age of buildings, according to cadastral municipalities, price blocks, etc.)
- The average unit price of building land in the Zagreb area also includes all horticultural land, since horticultural land is also considered to be construction land; the real estate database does not however provide the possibility of separating horticultural from building land, making therefore the average price lower than the actual settled price.
- It is not possible to analyze the market according to criteria other than those set by the competent ministry (e.g. according to building age, cadastral municipalities, price blocks, etc.).

In the Real Estate Transfer Tax Act (from the refined text of Official Gazette nr. 115/16, 106/18 in force from 01.01.2019) we can find some interesting information. The basis for the real estate transfer tax according to Article 9 of the Real Estate Transfer Act is the market value of the real estate at the moment the tax liability is incurred. The Ministry of Finance, the Tax Administration (hereinafter: the Tax Administration) shall determine, as a rule, the real estate transfer tax basis as the real estate market value on the base of the property acquisition document if the total price amount given or paid by the acquirer is approximately equal to the prices that are obtained or can be obtained on the market. The total price amount shall refer to anything the acquirer or another person on behalf of the acquirer gives or pays for real estate acquisition, such as cash payment, transfer of other real estate, property or rights, debts assumed by the former owner or other. The Tax Administration shall be authorized to estimate the real estate market value if the total price amount referred to in paragraphs 2 and 3 of this article is less than the prices that are obtained or might be obtained on the market at the moment when the tax liability is incurred. The estimate of the real estate market value referred to in paragraph 4 of this Article shall be determined by a Tax Administration officer based on comparable data on market value ranges for similar real estate from approximately the same area at approximately the same time. By way of derogation from paragraph 4 of this Article, if the real estate is acquired in a public tender, public sale (action) or bankruptcy proceedings with the appropriate application of provisions of enforcement regulations governing real estate enforcement and proceedings in which one party is a legal person majority-owned by the Republic of Croatia or the Republic of Croatia, units of local and regional self-government, state government bodies, institutions whose sole founder is the Republic of Croatia or a unit of local and regional self-government, the total price amount shall be everything given or paid for real estate acquisition by the acquirer or another person in the name of the acquirer. Article 10 determines the following: If the subject is a real estate for which there is no comparable data under Article 9(5) of this Act, nor are there real estate acquisition proceedings referred to in Article 9(6) of this Act, the real estate market value estimate shall be carried out by an expert opinion of an expert witness appointed by the head of the Tax Administration regional office. The real estate owner or possessor is obliged to provide access to the land and building for the authorized person referred to in paragraph 1 of this Article in order to estimate the real estate market value. There is, however, a problem. Although the Real Estate Valuation Act was adopted back in 2015, it is clear that the Tax Administration entrusts the tax basis assessment to a Tax Administration officer who shall make the estimate based on comparable data on market value ranges for similar real estate from approximately the same area at approximately the same time. Article 11 does not state that the assessment shall be carried out according to Article 3 of the Real Estate Transfer Act by a certified expert witness for real estate assessment, and a certified court valuer. It is just stated that the assessment shall be carried out by an "expert person" appointed by the head of the Tax Administration regional office.

It is unclear why the relevant provision of the Real Estate Transfer Tax Act is not stated so that one can't but question the qualification of the official who has to decide which tax basis will be assessed. This way of dealing with taxes shows incredible disregard for the state budget!!!

3.1. Hypotheses

This paper tested 2 hypotheses H1 and H2. H1 – the first hypothesis states that there is no systematic control of the accuracy of the established bases for tax assessment in the Republic of Croatia. This thesis is fundamental for this paper, very important, and refers to the investigation of the irregularity of the tax assessment procedure, considering that it generates huge damages to the state budget since no one controls the accuracy of the established bases for tax assessment. This is done by Tax Administration officials of the Ministry of Finance in various cities, which is in complete conflict with the Real Estate Valuation Act. As some reasons for adopting the regulations, apart from assessment consistency, i.e. uniformity, which is a legitimate reason, the government states that Croatia is the only EU member state that does not have a regulated real estate valuation process. Such a claim does not hold. Such a high level of regulation mainly applies to the countries Germany and Austria, and, as we have proven, our regulation is even much stricter and more restrictive than the one in Germany. For example, in the United Kingdom, whose real estate valuation sector is certainly among the most developed in the world, there is no regulations. Valuers are guided by the standards of professional associations, the application of which is mandatory for members of professional associations such as the Royal Institution of Chartered Surveyors – RICS. Another reason provided by the government is the obligation imposed on member states by Directive 2014/17/EU on consumer credit agreements related to residential real estate. That directive, however, does not oblige the member states to regulate this area at the sub-legal or legal level. Article 19 states:

Member states shall ensure the development of reliable standards for the valuation of residential real estate for the purposes of granting mortgage loans in their national territory. This article therefore presents standards, not regulations for the sub-legal or legal level.

In this directive, there are no guidelines for other real estate, business real estate or land. In Germany, there is a special regulation for real estate valuations that banks do for collateral purposes in the lending process. Therefore, neither the banking institutions in Germany nor in Croatia have anything to do with this Real Estate Valuation Act for real estate assessed for other purposes.

Article 26 of the Directive dated February 4, 2014 expressly recommends valuation methods developed by the EU professional associations of authorized real estate valuers: IVS, Tegova, and RICS, which are based on recommendations and standards, rules of the profession, economic indicators and primarily on the expertise, ethics and independence of an authorized valuer.

H2 - the second hypothesis. The sloppy and incorrect assessment of real estate transfer tax is correlated with the incorrect tax assessment basis, which means that the base for the assessment of real estate transfer tax is poorly determined and directly correlates with the fact that the eNekretnine database is based on numerous incorrect data. The incorrect basis for tax assessment generates a messy and incorrect assessment of real estate transfer tax and huge losses for the state budget!

Croatia is the only EU member in which expertise such as real estate valuation is prosecuted, which of course violates Article 38 of the Constitution of the Republic of Croatia, and at the

same time the valuers are not even provided with verified data in the database, in addition to the fact that the deadline for the formation of valuer commissions isn't met, whose minutes have not been publicly available for eight years, the question arises as to who will control the work of this commission, including the high commission, with which conflicts of interest have already been established, because cities and municipalities forward data in all procedures, which they should not do, especially in expropriation procedures! It was established that there is an impermissible conflict of interest if the beneficiary of the expropriation provides information on the transactions they conducted in the administrative procedure of determining the market value of the real estate that is being expropriated for his benefit, and he is also interested in the valuation to be as low as possible. In Germany, data on the real estate database is provided by a completely independent service.

3.2. Data collection and processing

The paper used data from the eNekretnine portal, data from the publications "Review of the real estate market in the Republic of Croatia" from 2020, 2021 and 2022 published by the Economic Institute of Zagreb, and Reports on the real estate market from 2020, 2021 and 2022 for the city of Zagreb issued by the Real Estate Valuation Service of the City of Zagreb. Croatia's real estate database (eNekretnine) was created partly only for some types of real estate after the Real Estate Valuation Act, which prescribes and sanctions its binding use, entered into force. The database is formed from sales contracts that are reported to the Tax Administration with the purpose of settling the tax liability. These contracts have, however, not been verified by expert valuers/valuer bodies and therefore often contain purchase prices that are the result of speculation which has the purpose of reducing real estate value in order to avoid the obligation of paying taxes. The existing database is not at all realistic (see attached examples) since the real estate values reported to the Tax Administration are reduced due to the significant real estate transfer tax of 5%, which is too high for such a small real estate market (Germany has a 3% real estate transfer tax). In addition to being insufficient, the database is also not properly defined in order to be applicable. Using IT terms, we can say that a "loop" has been created - a closed circle - due to the fact that the statistical data contains an unknown variable which should be used to determine the evaluation result.

In any case, the expert witness/valuer has (some) purchases and sales data at his disposal for the value calculation if they opt for the comparative method. If the evaluation object is a real estate consisting of a building and land, the following is however unclear:

- what are the geometric characteristics of the building sold,
- what is its state,
- what is the value of the land in relation to the entire property.

In addition to the fact that it is impossible to inspect all comparable properties, then the assumption that it is possible to determine the floor plan area of the building from the cadastral register or the land register (although not the total area and volume) and the additional assumption about its arrangement and condition, the value of the land remains unknown because the excerpt from the collection of deeds has cumulative data of the value of the house with land. Furthermore, with the assumption that the value of the land is calculated separately for each of the comparable properties and deducted from the value of each entire property, it is possible to calculate the unit price of the potentially comparable building somewhat accurately. Article 6 of the Real Estate Valuation Act determines the use of the real estate database, but sales contracts do not reflect the true state on the market, as we know that lower prices are set due to the real estate transfer tax.

There is a number of data missing from the database:

- construction year of the property, legality and availability of legality documents
- degree of building furnishing,
- building value,
- type and method of maintenance,
- thermal insulation and energy properties of the property,
- heating method, cooling method,
- building orientation,
- type of carpentry (exterior and interior),
- materials used in construction parts,
- type of built-in installations, connection possibilities to existing services (in case not all services are available)
- adaptation year and type of work included (if carried out),
- types of parquet floor coverings, ceramics and sanitary ware,
- building floor number where the property being compared is located,
- location characteristics are not described (proximity to the urban center and shops, proximity to schools, kindergartens, availability of public city transport, environmental pollution, noise, etc.).

For these reasons is not possible to use this data to the fullest extent, meaning that the justification and legality of using such incomplete and unreliable data in any assessment method would be questionable. The problem we have recognized is that in most cases, most transactions are not voluntary at all. A significant number of purchases and sales have been made in court and administrative proceedings by resolving foreclosures or expropriations, and that were by no means voluntary transactions that can serve as a basis for determining market value. In addition, many towns and counties offer land in their entrepreneurial or business zones for €1 or several € with the condition that the entrepreneur employs a certain number of people or participates in the development of transport infrastructure. There is no information on how much the land is really worth after these conditions have been met, but that kind of price (€1 or several €) is always included in the real estate price average, which is absolutely unacceptable and leads to the wrong price average of realized purchase price values. Therefore, there was a need to give the possibility of using the data from registered companies, i.e. real estate agencies that, after buying and selling the real estate they offer, have archived everything about the specific real estate: from the interior and exterior photos, the legality and infrastructure information, the proximity to all leisure opportunities, etc. If the sale was independent, carried out without an agency as the intermediary, then the seller must fill out a questionnaire with all important features of the property when registering it with the Tax Administration, or when notarizing their signature at the notary public. The continuous false reporting of smaller sales values also results in substantial tax evasion, meaning that the act of excluding expert witnesses from the Tax Assessment Commission 10 years ago was not at all a good decision, and that paying expert witnesses in accordance with their knowledge and experience had a significantly greater effect for the market, unlike of the current chaotic situation and the loss of billions for the state. The real estate database eNekretnine does not contain data on lease agreements, which is necessary when evaluating real estate using the income method. Lease agreements usually fall into the category of trade secrets so that it is absolutely impossible, except for a few small business premises rented by local self-government units), to obtain information on the lease of a business facility or space. A major shortcoming of the real estate database eNekretnine is insufficient knowledge of cadastral operations and cadastral data by the persons who enter the data and the persons who have to verify these entries.

The persons entering data on purchases and sales do not distinguish between the terms building parcel and cadastral parcel. Marks of purchase and sale of apartments, houses and business premises, which bear the marks Z or ZGR on the cadastral base in the cadaster and land registry, are marked graphically in a completely wrong location in the eNekretnine database. In addition, according to both European and international standards, it is allowed to use data from a market offer with a price correction according to the instructions that exist, and have been translated from German which explain how the offered price shall be corrected, especially if the valuer does not have enough data available in the database. According to our regulations however, it is prohibited, meaning contrary to European and international standards.

4. RESEARCH RESULTS

This research proves that the current way of taxing the real estate transfer tax is not sustainable, as well as that such taxed transactions are not useful for valuers since they are not accurate, since they are done by non-qualified Tax Administration officials, and are not verified before being entered into the eNekretnine database by experienced expert witnesses.

NOVOGRADNJA U TURISTIČKOM NASELJU M (prodani stanovi)

površina (m2)	datum prodaje	cijena (€)	cijena (€/m ²)	indeks	međuvr. izjed. Cijena(€/m ²)	odstupanje od prosjeaka
46,30	02.11.2015.	18.556,02	400,78	91,88	400,78	-52,70%
82,02	21.09.2015.	32.657,08	398,16	91,43	400,12	-52,77%
47,89	14.10.2013.	60.285,90	1.258,84	95,19	1.215,07	43,42%
46,43	25.09.2013.	18.652,00	401,72	97,80	377,41	-55,45%
72,03	09.05.2013.	92.863,05	1.289,23	96,21	1.231,20	45,32%
46,30	09.05.2013.	18.536,74	400,36	96,21	382,34	-54,87%
82,02	09.05.2013.	32.808,00	400,00	96,21	382,00	-54,91%
49,09	02.04.2013.	93.224,78	1.899,06	96,21	1.813,59	114,06%
46,38	19.03.2013.	50.327,33	1.085,11	96,65	1.031,55	21,76%
55,09	09.02.2013.	71.760,30	1.302,60	96,65	1.238,31	46,16%
prosjeak					847,24	
najniža vrijednost		377,41 €/m2				
najviša vrijednost		1.813,59 €/m2				

There were as many as 10 apartments registered for sale in the sales period from 2013 to 2015 in the same building in Pula. The purchase prices differed significantly, the lowest being €377.41/m² and the highest €1,813.59/m². There were countless such situations in the Republic of Croatia.

Split - examples
 picture 1

1. Stan, apartmana u Splitu – cijena iz ugovora 100 eur/m².



2. U istoj zgradi – jedan stan je prodan za 713 eur/m², a drugi za 1914 eur/m²

picture 2



Naziv atributa	Vrijednost atributa
ID ZKC	273647
Datum pregleda	29.4.2016.
Vrsta nekretnine	ST - Stari/apartman
ID PN (PU)	3091695
Vrsta ugovora	KP - kupoprodaja
Ukupna površina nekretnine u prometu (m2)	56,25
Vrijednost nekretnine iz ugovora (KN)	304.875,28
Datum ugovora	19.09.2014
Status podatka	Preuzeto od PU

Naziv atributa	Vrijednost atributa
ID ZKC	273073
Datum pregleda	29.4.2016.
Vrsta nekretnine	ST - Stari/apartman
ID PN (PU)	2938635
Vrsta ugovora	KP - kupoprodaja
Ukupna površina nekretnine u prometu (m2)	28,32
Vrijednost nekretnine iz ugovora (KN)	411.710,31
Datum ugovora	15.01.2014
Status podatka	Preuzeto od PU

Picture 3



Naziv atributa	Vrijednost atributa
ID ZKC	273647
Datum pregleda	29.4.2016.
Vrsta nekretnine	ST - Stari/apartman
ID PN (PU)	3091695
Vrsta ugovora	KP - kupoprodaja
Ukupna površina nekretnine u prometu (m2)	56,25
Vrijednost nekretnine iz ugovora (KN)	304.875,28
Datum ugovora	19.09.2014
Status podatka	Preuzeto od PU

Naziv atributa	Vrijednost atributa
ID ZKC	273073
Datum pregleda	29.4.2016.
Vrsta nekretnine	ST - Stari/apartman
ID PN (PU)	2938635
Vrsta ugovora	KP - kupoprodaja
Ukupna površina nekretnine u prometu (m2)	28,32
Vrijednost nekretnine iz ugovora (KN)	411.710,31
Datum ugovora	15.01.2014
Status podatka	Preuzeto od PU

Image source 1,2,3: <https://nekretnine.mgipu.hr/Auth/>

What is even more devastating is the fact that such absurd data about apartment prices in Split were entered into the eNekretnine database. An 81.28 m² apartment/rental in an otherwise expensive part of the city was reported with having a purchase price of €125/m² (ID ZKC 272 714, sales contract dated February 26, 2013), an apartment / rental of 42.79 m² was registered with having a purchase price of €100/m² (ID ZKC 272 577, sales contract dated November 27, 2012) where a Tax Administration official failed to report the price of a comfortable apartment, etc., not to mention construction and agricultural land, with a complete omission of rent and lease prices.

https://www.zagreb.hr/UserDocsImages/segi/Izvjescje%20o%20trzistu%20nekretnina%20za%202020._Grad%20Zagreb.pdf

5. DATA FROM THE E-NEKRETNINE PORTAL FROM DECEMBER 2020 – LOCATION PANTOVČAK IN ZAGREB

-Building land: the data refer to price ranges starting from €185.73/m² (793 m²); €230.47/m² (807 m²); €308.70/m² (255.00 m²); €371.40/m² (152 m²); €394.46/m² (714 m²) and going up to the most expensive ones - €1,166.54/m² (420 m²). There is not a lot of information that should be present for real estate comparison: good access to the land, position in terms of orientation, shape and size of the plot, etc. The information that the average price of building land in the city of Zagreb is €181.84/m² (this data stems from the Report on the Real Estate Market in the Zagreb Area in 2020) is absolutely absurd and useless.

Table 1: Realized purchase and sale of building land in december 2020

No.	SURFACE AREA AND PRICE IN eNEKRETNINE	BASIS AND TAX 3% IN €	CORRECTED BASIS AND TAX 3% IN €	DIFFERENCE =LOSS OF UNPAID TAX IN STATE BUDGET €
1.	€185.73/m2 (793 m2)	(147,283.89) 4,418.52	(634,400.00) 19,020.00	14,613.48
2.	€230.47/m2 (807 m2)	(185,989.29) 5,579.68	(645,600.00) 19,368.00	13,788.32
3.	€308.70/m2 (255.00 m2)	(78,718.50) 2,361.55	(204,000.00) 6,120.00	3,758.44
4.	€371.40/m2 (152 m2)	(56,452.80) 1,693.58	(121,600.00) 3,648.00	1,954.42
5.	€394.46/m2 (714 m2)	(281,644.44) 8,449.33	(571,200.00) 17,136.00	8,656.67
6.	€1,166.54/m2 (420 m2)	(489,946.80) 14,698.40	(489,946.80) 14,698.40	-
overall:				42,801.33

Family houses: the question arises as to what are the values of realized house sales: they start from €136.31/m2 (21.60 m2); €139.86/m2 (356.07 m2), €244.67/m2 (401.66 m2), €461.12/m2 (64 m2), €507.10/m2 (680 m2); €754.04/m2 (767 m2); €808.83/m2 (26.80 m2); €814.24/m2 (1,112 m2); €866.23/m2 (188 m2), €935.64/m2 (501 m2) and end around of €1,468.34/m2 (118.40 m2).

This data is not well prepared for an expert witness since there is no data for as many as 6 locations on the construction time (property age). The property areas entered into the system also have to be checked because it turned out that actually for many properties the entire building plot area was entered into the system, leaving out data on the square footage of the house (both net and gross)! We can therefore determine that, according to the data of the Report on the Real Estate Market in Zagreb, the average house price in Zagreb amounts to 318 €/m²! Sale of houses in the Pantovčak residential area on GoHome, a real estate portal, are based on 123 properties and amount to the average price of €3,703/m2 indexed to the fourth quarter of 2020, so we will count that value as the basis for the tax assessment of € 2,851.31/m2.

Table following on the next page

Table 2: Realized house sales in december of 2020

No.	SURFACE AREA AND PRICE IN eNEKRETNINE	BASIS AND TAX 3% IN €	CORRECTED BASIS AND TAX 3% IN €	DIFFERENCE =LOSS OF UNPAID TAX IN STATE BUDGET €
1.	€136.31/m2 (21.60 m2)	2,944.30 88.33	61,588.30 1,847.65	1,759.32
2.	€139.86/m2 (356.07 m2)	49,799.95 1,494.00	1,015,265.90 30,457.98	28,963.98
3.	€244.67/m2 (401.66 m2)	98,274.15 2,948.22	1,145,257.10 34,357.71	31,409.49
4.	€461.12/m2 (64 m2)	29,511.68 885.35	182,483.84 5,474.51	4,589.16
5.	€507.10/m2 (680 m2)	344,828.00 10,344.84	1,938,890.80 58,166.72	47,821.88
6.	€754.04/m2 (767 m2);	57,834.87 1,735.05	2,186,954.70 65,608.64	63,873.59
7.	€808.83/m2 (26.80 m2)	21,676.64 650.30	76,415.11 2,292.45	1,642.15
8.	€814.24/m2 (1.112 m2)	905,434.88 27,163.05	3,170,656.70 95,119.70	67,956.65
9.	€866.23 /m2 (188 m2)	162,851.24 4,885.54	536,046.28 16,081.39	11,195.85
10.	€935.64/m2 (501 m2)	468,755.64 14,062.67	1,428,506.30 42,855.19	28,792.52
11.	€1,468.34/m2 (118.40 m2)	173,851.45 5,215.54	337,595.10 10,127.85	4,912.31
		overall:		292,916.90

Apartments: from €101.15/m2 (75.59 m2); €835.55/m2 (€16.18/m2); €914.29/m2 (€91.63/m2); €931.18/m2 (43.34 m2); up to €2,213.57/m2 (147.18 m2);

€1,508/m² was the average apartment price in 2020 in Zagreb, which is way below the apartment prices in the Pantovčak residential area. The sale of apartments in Pantovčak on the GoHome portal: 82 properties found - average price €3,456/m2 reduced by the index for the fourth quarter of 2020 amounted to €2,661.12/m2.

Of the 15 locations in Pantovčak, as far as 5 locations have no construction year listed. There is no information on the property condition, services, orientation, ownership by floor, reduced comfort, environmental impact.

<https://www.gohome.hr/nekretnine.aspx?q=prodaja%20stanova%20pantov%e8ak%20zagreb>

Table following on the next page

Table 3: Realized sales of apartments in december of 2020

No.	SURFACE AREA AND PRICE eNEKRETNINE	BASIS AND TAX 3% IN €	CORRECTED BASIS AND TAX 3% IN €	DIFFERENCE =LOSS OF UNPAID TAX IN STATE BUDGET €
1.	€101.15/m2 (75.59 m2)	7,645.93 229.38	201,154.06 6,034.62	5,805.24
2.	€835.55/m2 (16.18 €/m2)	13,519.20 405.58	43,056.92 1,291.71	886.13
3.	€914.29/m2 (91.63 €/m2)	83,776.39 2,513.29	243,838.42 7,315.15	4,801.86
4.	€931.18/m2 (43.34 m2)	40,357.34 1,210.72	115,332.94 3,459.99	2,249.27
5.	€2.213.57/m2 (147.18 m2)	325,793.23	-	-
overall:				13,742.50

It can be seen from the tables above that the total losses in the assessment of the real estate transfer tax amount to €349.460.73 based only on 20 realized sales transactions in the Pantovčak residential area in Zagreb due to unrealistic reported prices and entered bases for the real estate transfer tax assessment.

When searching through the eNekretnine database and focusing on the Pantovčak residential area. one can find, for example, on September 8. 2023, additional absurd entries of realized transactions despite public criticism in the media by expert witnesses:

- a building plot of 2890 m2 sold at the price of €79.58/m2
- a family house of 348 m2 sold at the price of €201.15/m2
- a family house of 419.20 m2 sold at the price of €1.884.54/m2

Based on the Report on the Real Estate Market in the Republic of Croatia from 2020 to 2022, which contains total annual sales, it can be determined that in the case of a minimal reduction of the reported tax basis of 20% the loss in the state budget would amount to €130,643,663.89.

Table 4: Realized sales in croatia 2020 - 2022

NO.	YEAR	NUMBER OF TOTAL SALES €	TOTAL PROPERTY SALES NUMBER IN €	REAL ESTATE TRANSFER TAX 3%	ASSUMED LOSS DUE TO IMPAIRMENT 20% €
1.	2020	103,093	5,312,015,796.40	159,360,473.89	31,872,094.78
2.	2021	133,997	7,974,782,666.40	239,243,479.99	47,848,695.99
3.	2022	116,734	8,487,145,470.00	254,614,364.10.	50,922,872.82
OVERALL:		353,824	21,773,943,932.80	653,218,317.98	130,643,663.89

Based on the Report on the Real Estate Market in the Republic of Croatia from 2020 to 2022, which contains total annual sales, it can be determined that in the case of a minimal reduction of the reported tax basis of 20%, the loss in the state budget would amount to €31,974,644.83.

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Table 5: Realized sales in the city of zagreb 2020 – 2022

No.	YEAR	NUMBER OF TOTAL SALES €	TOTAL PROPERTY SALES NUMBER IN €	REAL ESTATE TRANSFER TAX 3%	ASSUMED LOSS DUE TO IMPAIRMENT 20% €
1.	2020	14,553	1,417,830,823.46	42,534,924.70	8,506,984.94
2.	2021	16,639	1,810,395,506.22	54,311,865.19	10,862,373.04
3.	2022	16,214	2,100,881,141.88	63,026,434.26	12,605,286.85
OVERALL:		47,356	5,329,107,471.56	159,873,224.15	31,974,644.83

6. CONCLUSION

The aim of this paper was to research the (un)reliability of the established tax assessment basis. The method of taxation of the reported transactions and the accuracy of that base were analyzed in general. The tax base is in direct correlation with the real estate database eNekretnine, which is a tool for valuers when assessing the market value of real estate, i.e. the purchase/realized price of real estate, using the comparative method. The purchase price is then entered into the real estate statistics of the Republic of Croatia and after that into Eurostat. There is no doubt that too many ambiguities already appear when forming and searching for purchase and sale contracts in the eNekretnine database, before even choosing the methodology and procedure for determining the market value. Tax Administration officials cannot approve or determine which tax base is accurate and which is not, simply because they are not trained to do that job. The process of determining the market value based on unreliable/incorrect input data will result in an unreliable/incorrect value assessment, regardless of the method by which the assessment is made and the prescribed rules according to which it is done. The results of the conducted study suggest that the key problem for the preparation of the database is to determine a central point that will daily process the data received from the Real Estate Business Association of the Croatian Chamber of Commerce (HGK), which will record the data received from real estate agencies (with all their available data, photos, and characteristics) and the received data with questionnaires filled out by the parties who report the tax (after a detailed inspection of the real estate by the Commission at the Tax Administration with experts witnesses as mandatory members of those Commissions). Indeed, the Republic of Croatia has been losing a huge amount of budget funds for years due to the acceptance of falsified reported amounts of purchase and sale prices – which was made clear in this paper with showed several examples where absurd prices were reported, for example in Split, from €150/m² (these are the prices of apartments in popular locations that should not be estimated below at least €3,000 to even €7,000/m²). The measures that could significantly improve the current situation are that the existing Croatian Bureau of Statistics (Državni zavod za statistiku, DZS) needs to be even better organized and entrusted with all data processing, controlled by the profession - the Committee of Independent Expert Witnesses and the Ministry of Finance, with mandatory verification of the received data by the Commission made up of experts witnesses - valuers with proven long-term experience in real estate valuations. The Croatian Bureau of Statistics (DZS) has been processing various data for years, has the staff, the knowledge and the software that can be adapted and supplemented in accordance with the aforementioned needs required by the regulations on real estate valuations. It is impossible to expect this data processing from assessment commissions that meet periodically and have neither professional knowledge nor tools nor the necessary software with employed statisticians (mathematicians) to be able to process this complex procedure, which was completely unrealistic to expect. It is necessary to continuously prepare an analysis of the real estate market in Croatia and pass regulations that are in accordance with the state and expected dynamics of the real estate market development.

The fundamental question is whether our market is large, liquid and developed enough to comply with the current regulatory approach, which has very complex prerequisites in terms of the availability of a large amount of quality data. institutional prerequisites. etc., or if perhaps a better way would be to rely more on the valuer and direct regulation towards their knowledge, education, certification, licensing, independence, market power, etc. At the same time. it is necessary to enable the application of real estate valuation methods used in developed countries and recognized in international valuation standards, and leave it to the expert witness-valuer to choose the optimal method for the property in question, with ongoing mandatory education in order to increase knowledge and value this complex business. A high-quality real estate database on realized transactions is also important because of the expected mass assessments for the purpose of cutting citizens' property tax, which has been announced for years. The introduction of this tax is, however, still a political issue. It is clear that proper property records should be established, which is neglected in our country in the area of numerous state properties, making the property register very important for both the private sector and the state sector. Regardless of some limitations that this paper has, primarily that it has been carried out only for the territory of the Republic of Croatia, and because there is no publicly available data with the prices of realized sales transactions for every county or town that has a Real Estate Service, the findings and research results so far present a scientific contribution and certainly a good starting point towards further empirical research of the potential of the Tax Administration for the purpose of better regulation of the commission's determination of the real tax base and then entrusting the management of the national database to the Croatian Bureau of Statistics in order to realize a sustainable real estate database for the entire country, and as a realistic basis for Eurostat, the statistical office of the European Union. responsible for the publication of high-quality statistical data and indicators from all over Europe that enable comparison between countries and regions.

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MEASURING ENTREPRENURIAL TRAITS OF OWNERS OF SMALL FAMILY HOTELS

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ABSTRACT

The purpose of this paper is to provide an overview of measuring the types of entrepreneurial traits typically found in small family businesses. Family-oriented entrepreneurs often differ significantly from typical non-family entrepreneurs due to family goals, socioemotional wealth, and other social factors. These entrepreneurial traits influence the entrepreneur's approach to managing the company, where business goals frequently do not align with profit maximization at the expense of achieving family objectives. The specific aim of this paper is to present the entrepreneurial traits of owners of small family hotels in Croatia. An analysis of entrepreneurial traits was conducted on a sample of owners of small family hotels in Croatia (94). Extensive qualitative analysis of previous research was undertaken, correlating the obtained entrepreneurial traits of small family hotel owners. Levels of risk-taking and innovativeness were found to be low, with higher levels of proactiveness, which is consistent with findings from other family entrepreneurship research. The research highlights the necessity of empowering family entrepreneurs to expand their businesses and take more calculated risks where necessary. Empowerment strategies may include education and access to additional funds from local or governmental sources. Research limitations include a small sample size and a vague legal framework for determining family businesses.

Keywords: *entrepreneurial traits, small family hotels, business goals*

1. INTRODUCTION

Growth and profit-oriented entrepreneurs are highly valued in traditional entrepreneurship theory. From the perspective of economic development and tourism industry competitiveness, a typical goal is to attract and cultivate businesses that can compete, grow, and create jobs. But, when addressing small family business in tourism things change drastically. The theoretical and legal aspects of defining small family businesses in tourism are extremely complex. This complexity arises from the diverse activities within the tourism sector and the various laws and norms that, from a legal standpoint, govern the establishment and operation of such companies. The absence of a clear conceptual definition makes systematic statistical monitoring of these companies' operations impossible, and it is often very difficult to determine the role these companies play in a country's economy. Empirical studies of small and family businesses in tourism are primarily based on qualitative research for this reason, as quantitative financial data are often not available in public databases at the level of individual countries. Small and family businesses in tourism are frequently included in the data for all small businesses, making it challenging to identify which are family-owned. Consequently, some researchers develop their own conceptual definitions of small family businesses in tourism to determine the sample and conduct their research, which will be the approach taken in this study as well. When analyzing small family businesses, the focus is typically on the owner or family members, emphasizing human capital. This involves exploring entrepreneurial and other personal traits that influence the growth of the family business. The paper is structured as follows: The second chapter focuses on the measurement scales of entrepreneurial traits. The third chapter discusses various instruments for measuring entrepreneurial traits, where hypotheses are identified in alignment with the research results of other authors.

The fourth chapter explores the research results, while the fifth chapter addresses the research implications and limitations. The sixth chapter provides the conclusion.

2. LITERATURE REVIEW

Research in the field of entrepreneurship is paving the way for new directions in the development of entrepreneurial personality tests, emerging as a novel domain within the study of personality. In prior literature, certain authors (Carland, 1984; Chell, 1985; Gartner, 1989) have identified one specific personality trait, among a potential trio consisting of need for achievement, locus of control, and risk propensity, as integral to the entrepreneurial profile. These personality traits are commonly referred to as "The Big Three." The concept of the need for achievement was initially formulated by McClelland (1961) who posited that entrepreneurial behavior is fundamentally driven by this need. According to McClelland, an entrepreneur is an individual who innovates novel approaches to tasks, striving to outperform others and attain notable accomplishments. Moreover, such entrepreneurs, as defined, exhibit a penchant for soliciting feedback on their performance to facilitate continuous improvement. The development of a personality test to assess this need for achievement was a collaborative effort involving Atkinson and Birch (1979) with the thematic apperception test (TAT) serving as its foundation. However, criticism has been directed towards this personality test, particularly regarding its purportedly limited predictive capacity concerning an individual's inclination to embark on entrepreneurial endeavors. Johnson (1990), through a comprehensive review of empirical studies, identifies a correlation between motivation for achievement and entrepreneurship. Additionally, Johnson proposes open-ended models that could incorporate the multifaceted nature of business initiation and expansion, the intricate interplay of internal processes, and the impact of pivotal environmental variables. Expanding on this notion, Sagie (1999) further operationalize the need for achievement, conceptualizing it as personal responsibility, willingness to confront uncertainty, propensity for innovation, and diligence. In their research, they examine a cohort of economics students with aspirations to establish a business, comparing them to counterparts who do not harbor such intentions. Statistical analysis reveals that students exhibiting entrepreneurial inclinations, namely those intending to launch a company, demonstrate greater readiness to confront uncertainty, embrace calculated risks, assume personal responsibility, and adeptly navigate problem-solving scenarios. Additionally, Stewart (1999) utilize Jackson's (Paunonen and Jackson, 1996) questionnaire to assess the need for achievement, risk tolerance, and innovativeness among entrepreneurs in comparison to non-entrepreneurs. This questionnaire encompasses both individual and organizational variables. Their findings suggest that while small business owners do not exhibit a heightened need for achievement or a particular inclination towards innovation, they do demonstrate a greater propensity for risk-taking. Moreover, their primary focus lies in generating income for their families, viewing their businesses as integral extensions of their personalities. Conversely, Utsch (1999) employ a different approach, measuring the need for achievement and operationalizing it through distinct personality traits, including autonomy, innovation, proactivity, and competitive aggressiveness. The next fundamental trait, locus of control, was conceptualized by Rotter (1966). Individuals with an internal locus of control perceive themselves as having agency over their lives, whereas those with an external locus of control attribute outcomes to fate or external forces. It has been posited that entrepreneurs and business owners tend to exhibit a stronger internal locus of control compared to the general population. Some scholars argue that locus of control may better delineate an entrepreneur's character than the need for achievement, although these two traits are often interconnected. The propensity for risk-taking is a trait that has garnered considerable attention and has long been associated with entrepreneurship and the analysis of entrepreneurs (Schumpeter, 1934).

While it is commonly held that entrepreneurs are risk-averse individuals, such a broad assertion warrants a more nuanced examination within a narrower context. As early as the 1980s, some authors (McClelland, 1961; Timmons, 1985) argued that entrepreneurs are individuals who engage in calculated risk-taking. When assessing risk propensity, it is crucial to clearly define who qualifies as an entrepreneur to ensure the accurate delineation of the research sample and to precisely ascertain the nature of risk through test questions or statements. Depending on factors such as entrepreneurial type, socio-cultural milieu, economic conditions, and other external influences, risk propensity can vary significantly. Small business owners, for instance, may exhibit a more conservative approach to risk, carefully calculating their decisions when faced with uncertainty. Given that risk, risk-taking, and risk management are central to business endeavors, it is unsurprising that research on risk orientation remains a vital and ongoing area of inquiry. Similar to research on locus of control and need for achievement, studies on risk orientation often consider these traits in conjunction with other aspects of personality. According to some research (Stewart, 2001) entrepreneurs demonstrating a high need for achievement tend to engage in calculated risk-taking and are not inclined towards impulsive or reckless decisions. However, it was the work of Miller (1983) that catalyzed the proliferation of the concept of the entrepreneurial firm within scholarly discourse. Miller contended that an entrepreneurial firm distinguishes itself by innovating in its products and market strategies, embracing risk-taking, and pioneering proactive innovations that effectively sideline competitors from the market. Miller's seminal work highlighted three foundational entrepreneurial qualities of the firm's owner: innovation, proactivity, and risk-taking. These traits have since served as the cornerstone for measuring entrepreneurial tendencies and are incorporated into the majority of measuring scales and instruments. More recent trends in entrepreneurial trait and personality research draw on strategic management literature and employ five-dimensional models, commonly referred to as "The Big Five," to elucidate entrepreneurial processes and traits (Covin, 1997; Lumpkin, 1996; Miller, 1983). These models encompass traits such as autonomy, innovation, risk appetite, proactivity, and competitive aggressiveness. Autonomy stands as a pivotal entrepreneurial trait, denoting the capacity for independent action by an individual or group seeking to materialize an idea. Fundamentally, autonomy presupposes both the ability and willingness of individuals to seize and realize perceived business opportunities. Within organizational contexts, autonomy pertains to tasks unencumbered by conventional organizational constraints. Lumpkin and Dess (1996) present case studies showcasing successful entrepreneurs who prioritize autonomy, often sidestepping conventional norms to achieve remarkable outcomes. Their work lays the groundwork for the development of tests aimed at measuring autonomy within entrepreneurial contexts. Innovativeness entails an entrepreneur's proclivity to embrace novel ideas, experiment, and partake in creative endeavors that may yield new products, services, or technological processes. However, it's essential to note that innovation is a multifaceted concept encompassing various dimensions. The spectrum of innovation spans a wide range, with degrees of innovation varying considerably. It represents a departure from existing technologies and business practices towards novel, unestablished approaches. It's crucial to differentiate between technological innovations and market innovations, which manifest as new products or services introduced to the market. Recent research has increasingly examined innovation from the perspectives of technical sciences, informatics, and industrial knowledge. Another commonly utilized measure involves assessing the frequency of new product and service introductions within a company over a specific period, as well as the rate at which products or services undergo modifications (Covin and Slevin, 1997). More recent works by the authors extensively delve into innovation, the effectiveness of entrepreneur-owners of family businesses in tourism, the role of research, and their corresponding impact on business success (Broekaert, 2016; De Massis, 2014; Lee, 2016; Zainol, 2012).

Innovation within small family businesses is perceived markedly differently compared to large corporations. Specific characteristics inherent in family management, such as centralized management structures, limited resource utilization, and asymmetric norms of responsibility, can significantly constrain innovation within family businesses (Kotlar, 2013). Proactivity, as a behavioral trait within the framework of organizational behavior, denotes the human inclination to exert control over and manage the environment. The first comprehensive scale for measuring proactivity was developed and meticulously evaluated by Bateman (1993). Lumpkin (2001) define proactivity as a proactive approach characterized by the pursuit of opportunities, a positive mindset, the introduction of new products or services ahead of competitors, and actions aligned with anticipated future demand to shape the environment. In the context of the Republic of Croatia, proactivity remains a relatively novel construct, with limited empirical research in the realms of psychology, particularly entrepreneurial and managerial psychology (Zarevski, 2002). Nonetheless, the trait of proactivity holds significant importance for entrepreneurial orientation, signifying a forward-looking perspective that fosters innovative or novel business initiatives. While proactivity is often linked to competitive aggressiveness in the literature, these traits, albeit similar, remain distinct. Proactivity is primarily associated with the introduction of new products and services, whereas competitive aggressiveness pertains more to competitive engagement aimed at improving market position, often without necessarily introducing novelties or innovations. Recent research has demonstrated the positive impact of entrepreneurial proactivity on business success (De Massis, 2014; Zellweger, 2012) highlighting its significance in entrepreneurial endeavors. In contrast, competitive adaptability, a more recent trait, emerges as the antithesis of competitive aggressiveness. Grounded in social identity theory and socio-emotional wealth theory, competitive adaptability is particularly relevant to small and family businesses (Kallmuenzer, 2014). It characterizes small family businesses in industries such as tourism, where lifestyle entrepreneurs prioritize collaboration with competitors to create synergistic effects and blend harmoniously with the environment, rather than engaging in competitive suppression.

3. SAMPLE AND HYPOTHESIS DEVELOPMENT

Entrepreneurial traits and behaviors have evolved concurrently with the recognition of the entrepreneur as an individual entity. The primary theories underpinning the development of measurement scales for entrepreneurial traits and behaviors include human capital theory, personality theory, and trait psychology. These theories, rooted in psychology, provided the framework for the development of measuring instruments, or tests, aimed at assessing entrepreneurial personalities and characteristics. Numerous connections exist between the psychology of individuals and their personality traits, which are subsequently applied to the analysis of entrepreneurs. While developing a measuring instrument is not without its challenges, the paramount concern lies in crafting a robust instrument grounded in solid theoretical and conceptual foundations, capable of yielding reliable results and possessing strong predictive power. Moreover, a recurring question pertains to whether the entrepreneurial personality is unidimensional or multidimensional. In other words, does it comprise one or more traits drawn from various personality dimensions? This question underscores the complexity inherent in understanding and measuring entrepreneurial traits and underscores the importance of comprehensive and nuanced approaches in assessment. Table 1 provides a list of authors who laid the foundations for the study of entrepreneurial traits and personality characteristics (Chell, 2008).

Table 1. Development of methods for measuring entrepreneurial and personality traits

Author	Approach
Rotter, 1966.	One personality trait approach, which is the locus of control.
Eysenck, 1967.	The personality structure approach, the personality system is identified, and measurement scales are introduced to measure personality traits. Approach to personality traits from the aspect of biology. The underlying concept is that behavior reflects biological differences.
Wilson, 1973; Baron i Ward, 2004.	Cognitive approach of assessing personality. Measuring type – value system (conservative approach).

Source: adjusted according to Chell, 2008, pp. 84

The first personality tests and statistical processing of research results were conducted using factor analysis, with questionnaires being the measuring instruments for personality assessment. Nowadays, there are numerous other techniques available. Each dimension was assessed using an individual scale with consideration of various psychometric properties such as reliability, stability, and validity. The identification of primary personality traits was established through Cattell's questionnaire (Cattell, 1977), specifically the standard 16PF test comprising 16 questions. However, this initial test encountered some shortcomings, such as internal inconsistency, prompting other authors to attempt corrections aimed at improving the questionnaire. Additionally, one of the most influential tests used for approximately fifty years is Eysenck's three-factor model (1997) which includes neuroticism, extroversion/introversion, and psychoticism as the three personality types. Presently, the five-factor model is widely used, addressing the limitations of the three-factor model by incorporating neuroticism, extroversion, openness, conscientiousness, and agreeableness as its components. Within psychology, several scholars have made notable contributions by developing personality tests. Examples include the Personal Preferences Test by Edwards (1959), the Personality Test by Jackson (1967), and the General Entrepreneurial Tendencies Test by Caird (1991). These tests aimed to capture various dimensions of personality relevant to entrepreneurship. Several authors have conducted analyses on the typical methods of measuring entrepreneurial traits. Rauch (2009) examined fifty-one empirical papers to identify and assess these traits. Their significant contribution includes determining a baseline correlation coefficient of 0.242, proposed as a standard for measuring the relationship between entrepreneurial traits and performance. Similarly, Wales (2011) scrutinized 158 empirical papers focusing on entrepreneurial traits. Common areas of investigation encompass risk propensity, innovation, and proactivity, with fewer studies exploring autonomy, competitive aggressiveness, and locus of control. The majority of research is concentrated in developed countries such as the USA, Finland, Australia, and Denmark, with a noticeable dearth of studies in individual countries (e.g., Brazil, India, Russia) and emerging regions (e.g., Eastern Europe, the Middle East). In the Republic of Croatia, a project has been undertaken leading to the development of an innovation test known as the Croatian Test of Innovation (2016). This structured questionnaire allows entrepreneurs to assess their innovation activities conveniently through an online platform. Although there is a considerable number of authors who study and measure entrepreneurial orientation, only a relatively small subset of researchers investigates entrepreneurial traits within samples of small family businesses. This number becomes even smaller when considering such research within the context of the tourism industry.

One example of authors who do examine the entrepreneurial characteristics of small family business owners in tourism is Peters (2015). Scales for measuring entrepreneurial orientation were developed into a structured questionnaire for research purposes by the aforementioned authors. These scales were adopted after the authors verified and demonstrated the consistency of the measuring instruments, thus mitigating potential inconsistencies. Since most of the listed scales are primarily in English, certain modifications were made to ensure clarity of language constructs for the respondents. Additionally, cultural and social aspects were taken into consideration when adjusting the statements related to entrepreneurial traits. Furthermore, Zellweger (2011) propose elements for examining entrepreneurial traits, i.e. entrepreneurial orientation, which can be easily applied to small family businesses in tourism. However, individual questions and claims need to be empirically verified in as many companies and in as many countries as possible with statistical tests. The development of measurement scales for assessing entrepreneurial traits and personality necessitates precision in both their creation and the selection of the appropriate population. Many studies on entrepreneurial traits and personality identify population selection as a significant challenge, given the complexity of sampling procedures. Once the measurement scales are established, additional questions arise regarding the relevance of the research context and contextual variables. In most research endeavors, entrepreneurial traits are often examined in conjunction with environmental, sociological, and market factors due to their interconnectedness and mutual influence. This holistic approach recognizes the intricate interplay between individual traits and external influences, acknowledging their combined impact on entrepreneurial behavior and outcomes. On the basis of previous research, the hypotheses are developed for the purposes of this research:

- *H1. Risk propensity, innovativeness and proactivity levels are low in small family hotels*
- *H2. Entrepreneurial traits of owners are intercorrelated in small family hotels*

Research instruments are aligned with the research of other authors (Uhlaner, 2012; García-Piqueres, 2019). Anticipating potential concerns and uncertainties during the questionnaire completion process for this research, supplementary questions were incorporated into the interview protocol with small family hotel owners in Croatia prior to the surveying process. The measurement of the entrepreneurial dimension in small family businesses within the tourism sector is still in its nascent stages. Therefore, three fundamental and commonly used measures to assess entrepreneurial traits were adopted: risk propensity, innovativeness, and proactivity, as suggested by the aforementioned authors.

4. RESEARCH RESULTS AND DISCUSSION

The surveying process commenced in 2022 and concluded by the end of 2023. Structured questionnaires were sent to the email addresses of small family hotels to be completed by either owners or family members working at the hotels. The sample comprises businesses that are members of the National Association of Small and Family-Oriented Hotels, as there is no legal framework in Croatia to identify family-owned businesses. Therefore, membership in the association was utilized as a proxy for the population. Out of all members, 180 businesses, i.e., small family hotels, met the criteria for inclusion in the research. A total of 90 responses were obtained. To ensure representativeness, we followed the recommendations of other authors (Tkalec Verčić, 2013) and accepted between 30% and 50% of responses to validate the research. Obtained data were analyzed by using the software JASP. This section of the paper presents the findings of three selected entrepreneurial traits among a sample of small family hotel owners in the Republic of Croatia. Risk propensity, innovativeness, and proactivity were identified as the most prominent traits. To assess the reliability of the questionnaire constructs, Cronbach's alpha was calculated.

Risk propensity, with all three variables, yields a Cronbach's alpha of 0.719, indicating satisfactory reliability of the measuring instrument. Innovativeness, assessed through all three variables, produces a Cronbach's alpha of 0.931, signifying high reliability of the measuring instrument. Proactivity, evaluated with two variables, results in a Cronbach's alpha of 0.919, also indicating high reliability of the measuring instrument. Out of the 90 respondents, i.e., owners of small family hotels, who could select answers on a Likert scale ranging from 1 to 5, the value 17 (85/5) is achieved, which surpasses 4 (Zellweger, 2013). Furthermore, the traits tested in this research were operationalized as follows.

Risk

- Risk 1: "I often take calculated risks to gain an advantage in the market."
- Risk 2: "I am ready to invest a large part of my own money (risk) for future business benefit (financial and/or non-financial)."
- Risk 3: "I mostly like to start businesses that carry risk."

Innovativeness

- Innovativeness 1: "It is important to me that my business and services are innovative (different from the competition, in step with the development of informatics, the development of the profession, with market trends)."
- Innovativeness 2: "I invest a lot in the innovativeness of my business and/or services."
- Innovativeness 3: "If I had more available money, I would invest more in innovations in business."

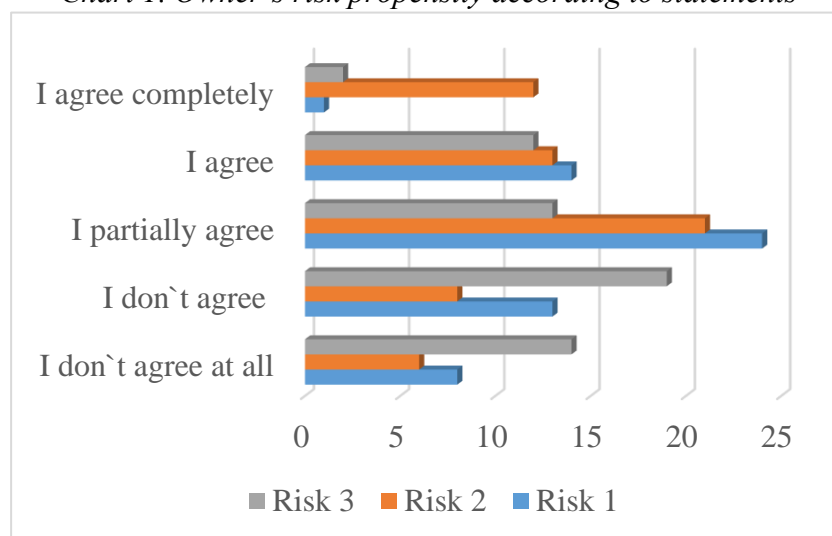
Proactivity

- Proactivity 1: "In my company, we introduce new services/products before our competitors do."
- Proactivity 2: "We often introduce new products/services that are not yet on the market."

Additionally, graphs provide a detailed breakdown of the distribution of individual entrepreneurial characteristics based on respondents' statements.

Below we can see the research results firstly for risk propensity.

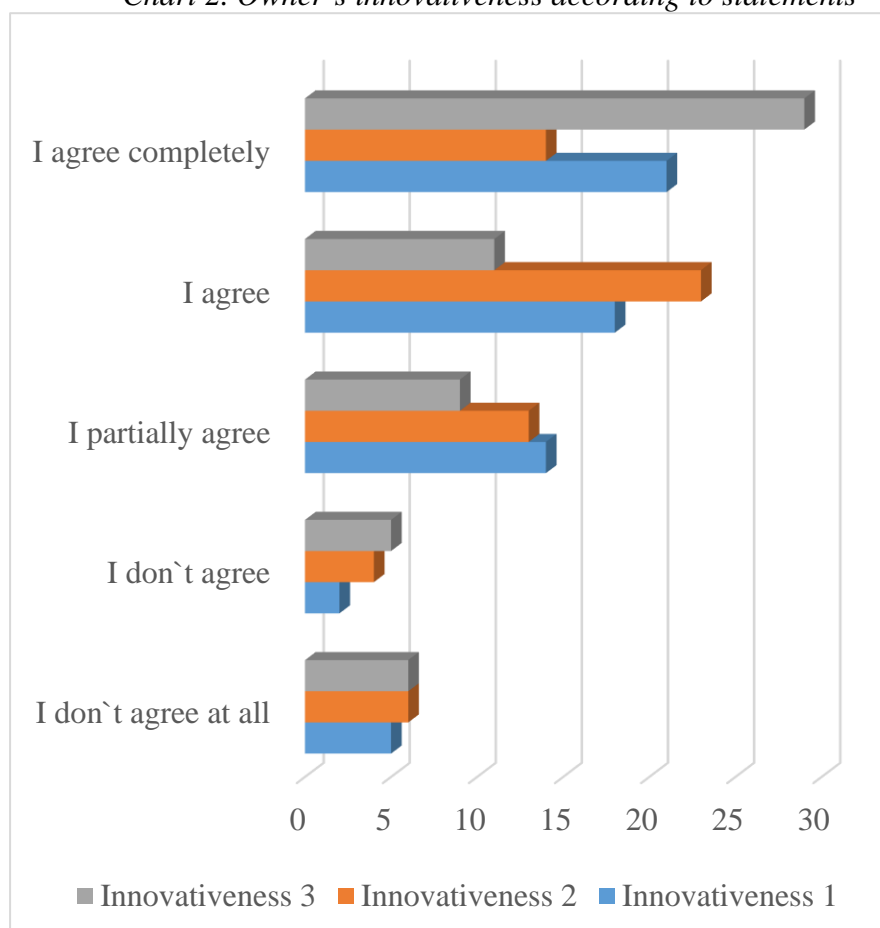
Chart 1. Owner's risk propensity according to statements



Source: author

The majority of respondents partially agree with all three statements assessing risk propensity as an entrepreneurial trait of the owner, showing a high level of agreement across all questions. A similar pattern is observed with the statement "I agree," indicating consistent responses among respondents. However, there is notable variation in the selection of statements among respondents who completely agree. While the largest number of respondents fully agree with statement risk 2, there is divergence from statements 1 and 3. Next, we present an analysis of the entrepreneurial trait of innovativeness, along with the selected statements rated on a Likert scale ranging from 1 to 5.

Chart 2. Owner`s innovativeness according to statements

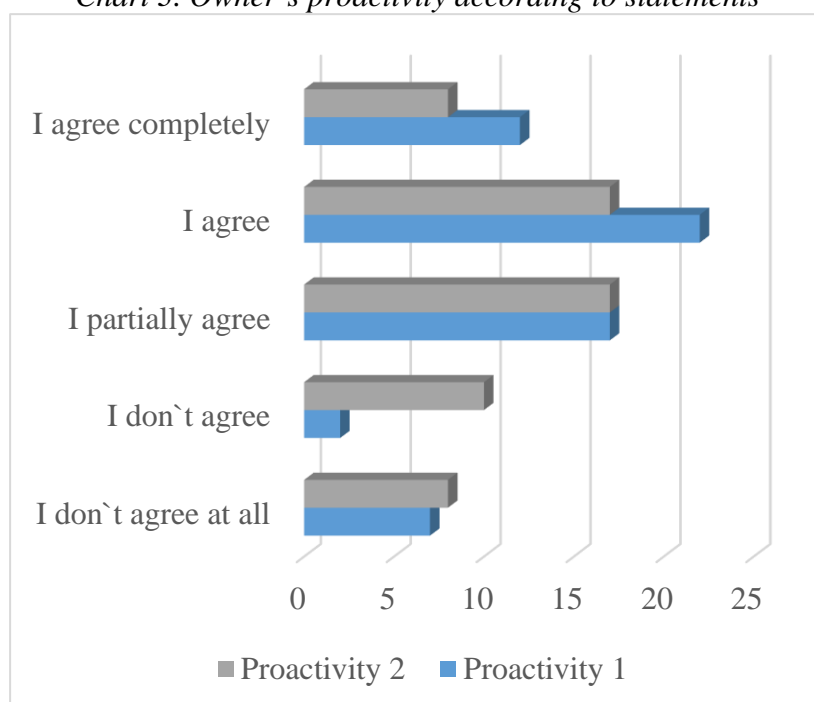


Source: author

Based on chart 2, it is evident that the majority of respondents perceive themselves as possessing the characteristics of innovativeness, as indicated by their responses across all three statements assessing innovativeness. Both "I completely agree" and "I agree" categories significantly dominate the graphical representation, reflecting a strong consensus among respondents regarding their level of innovativeness. Some authors correlate innovativeness with the innovative ways of obtaining funds as part of the innovative financial ecosystem (Sandhu, 2023) in the context of small family businesses in tourism. Further on, on chart 3 we can see owners proactivity levels. Based on graph 3, it can be inferred that the majority of owners are perceived as proactive, possessing traits of proactivity. This conclusion is supported by the selection of values 4 and 5, corresponding to the statements "I fully agree" and "I agree," which are chosen by a significant number of respondents. Additionally, a relatively large proportion of respondents selected "partially agree," which could potentially be attributed to respondents' lack of enthusiasm or engagement in completing the structured survey questionnaire.

Other authors find that among personality traits, innovative behavior, tolerance and hardworking have a positive impact on the identification of opportunity in the tourism sector, a trait that can be seen as proactivity (Ahmed, 2022).

Chart 3. Owner`s proactivity according to statements



Source: author

Upon analyzing the descriptive statistics of the sample, it is evident that respondents' answers exhibit minimal deviations, as indicated by relatively small variances and low standard deviations. The mean values of all entrepreneurial traits range from 2.48, representing the lowest value for the risk trait, to 3.8 and 3.87, representing the highest values for the innovativeness trait. Based on the research findings, it can be concluded that owners of small family hotels demonstrate a lower propensity for risk compared to other entrepreneurial traits. Other authors also argue that family entrepreneurial background and innovation influence the intention to start a new business and to maintain the family business, with detecting lower levels of risk in family business (Altinay, 2012; Peters, 2018). The mean value of all risk statements falls between 2 and 3, indicating lower levels of risk propensity among respondents. In essence, selections of "partially agree" or "disagree" for the risk statements suggest a cautious approach to risk-taking. For innovativeness, the mean value of all statements lies between 3 and 4, indicating slightly higher levels of innovativeness among respondents, particularly with selections of "partially agree" and "agree." Similarly, the mean value of all proactivity statements also falls between 3 and 4, suggesting a higher level of proactivity among respondents. Table 2 shows the correlation of entrepreneurial traits. Most entrepreneurial traits exhibit significant correlations, with Spearman's r close to or greater than 0.5, signifying a strong correlation. The significance level is generally greater than 99%. Based on these correlation results, it can be inferred that respondents possess multiple entrepreneurial traits, and that no single isolated entrepreneurial trait is characteristic of an owner who is an entrepreneur. Notably, individual statements of innovativeness and risk propensity ($r=0.202$, $p>0.05$), as well as proactivity and risk propensity ($r=0.153$, $p>0.05$), do not show significant correlations.

Table 2. Correlation of entrepreneurial traits

	Risk 1	Risk 2	Risk 3	Innovativene ss 1	Innovativene ss 2	Innovativene ss 3	Proactivit y 1	Proactivity 2
Risk 1								
Risk 2	,517*							
Risk 3	,497*	,393**						
Innovativeness 1	,563*	,477**	,302*					
Innovativeness 2	,576*	,493**	,291*	,871**				
Innovativeness 3	,444*	,397**	,202	,599**	,619**			
Proactivity 1	,440*	,445**	,153	,750**	,764**	,484**		
Proactivity 2	,523*	,404**	,363**	,733**	,735**	,369**	,851**	

*Note: ** Correlation significance at 0,01, *Correlation significance at 0,05.*

Source: author

The research results presented in this paper fill a gap in the family business literature. The obtained results suggest that additional encouragement for local family businesses is needed to help owners grow their enterprises. Risk propensity is quite low because owners of small family businesses in tourism tend to minimize financial risk, as the whole family is involved in the business. Innovativeness in tourism is crucial for business development, necessitating additional education. Local government funding for educational or lifelong learning programs could be significant in developing innovative products, and mentorship programs organized by corporations in the tourism sector should also not be neglected. Research limitations include a relatively small sample size and the reluctance of owners to engage in the research due to a lack of time and interest. Additionally, it is impossible to identify the population of small family businesses in the Republic of Croatia since there is no legal basis to record family ownership in businesses, resulting in no data available for analysis.

5. CONCLUSION

This paper fills a gap in the family business literature, as there is still no comprehensive theory due to the field's extreme complexity, which combines entrepreneurial, business, psychological, emotional, and many other factors impacting family businesses. The research results suggest that small family business owners tend to avoid making risky decisions and perceive themselves as innovative and proactive.

Additionally, the three chosen entrepreneurial traits are intercorrelated. Since tourism significantly contributes to Croatia's GDP, national authorities should invest more in developing small family businesses in this sector by providing support for financing and fostering innovation.

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THE CONTRIBUTION OF BUSINESS INTELLIGENCE TO DIGITAL STRATEGIC COMMUNICATION: A CASE STUDY

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ABSTRACT

Business Intelligence offer several advantages concerning digital communication and understanding the audience better to establish more targeted and segmented strategies is fundamental. With this in mind, this work aims to create a data analysis solution through the implementation of a Business Intelligence solution for a professional training company, using the CRISP-DM methodology. The data was extracted from Google Analytics and the dashboards were developed to provide useful insights for communication managers, using the Power BI tool.

Keywords: *Business Intelligence, Data Warehouse, Decision Support Systems, Digital Communication*

1. INTRODUCTION

Digital marketing encompasses a variety of channels such as search engines, social media, and email to meet diverse consumer needs. It can function independently or complement traditional marketing endeavours. The digital landscape enables automated data collection from customer interactions, although handling this data can pose challenges. Online marketing, including mobile and display advertising, depends on digital platforms for promoting products or services. Considering the importance of data-driven decisions in organizations, aligning corporate efforts through cohesive channels is essential for effectively measuring and predicting outcomes [1]. On the other hand, Business intelligence (BI) systems play a crucial role in enhancing digital marketing strategies. They enable digital communication agencies to gain insights into customer behaviour and preferences [2]. In the era of big data, companies rely on BI and data analytics to uncover valuable insights for digital marketing and communication purposes [3]. BI applications in decision-making for digital advertising involve analysing various types of data and using visualization techniques to enhance decision-making processes [4]. Incorporating BI tools in digital marketing practices is essential for maximizing gains and productivity, emphasizing the indispensable nature of BI in digital marketing campaigns [5]. Artificial Intelligence (AI) complements BI by aiding in strategic decision-making, customer targeting, and personalized marketing, ultimately improving decision-making processes in digital marketing [6].

In this context the present work develops an integrated business intelligence solution for a professional training company using the CRISP-DM methodology. In this article, theoretical background section presents the concepts of communication, digital channels, SEO and BI, material and methods section propose the creation of a BI solution using the CRISP-DM methodology and finally the main conclusions are presented.

2. THEORETICAL BACKGROUND

Currently, as a result of progressive technological evolution and the adoption of digital communication, data has a fundamental role in organizations and is increasingly necessary and useful for decision-making.

2.1. Evolution of communication

According to Coimbra [7], the concept of communication presupposes sharing, making something common and transforming something that is individual into something collective. The author also defines communication as a means of sharing information, facilitating the dissemination of knowledge and creating links between people. The beginning of the new millennium brought the dissemination of knowledge and information through virtual social networks, popularizing a new language and the concept of digital communication emerged [8]. While in the past, it took days for a message to reach its destination, nowadays, just a few seconds are enough [8]. Communication has evolved over time, as man developed tools that allowed messages to be transmitted more easily, moving, for example, from cave paintings to the mass production of books and newspapers, in order to spread knowledge [8]. Ferreira [9] defines digital communication in organizations as the act of communicating, that is, of transmitting whatever, through technological means that fit into this digital era, with the purpose of disseminating content about companies, converting potential consumers into effective consumers. The main goal of this communication is to bring the customer closer to the company [10]. The constant dissemination of content or information in the digital environment means that organizations have a large number of data to analyse, which is why it is necessary to carry out careful analysis, so as not to lose any information.

2.2. Digital channels and their strategic importance

Digital communication has grown significantly alongside the expansion of digital channels on the Internet and to Ribeiro [11] digital channels are for interacting with potential or current customers, providing them with information about products or services and are a distribution channel, complementary to physical stores, to make sales. Within the multiple's digital channels, social networks stand out and these play a fundamental role in society and in particular in organizations, since digital communication carried out, mainly through social networks, is inseparable from the daily lives of individuals and organizations. [10]. Dantas [12] defines a social network as a space that aims to connect interests, opinions, or goals through people and further adds that these spaces can be created inside and outside the virtual world, but with the internet, the growth of these types of environments have become increasingly common and popular among people. In the literature, several authors highlight the different strategic contributions of social networks to an organization. For Faustino, et.al [13] social networks are a remarkable tool at a functional, social and psychological level, in the decision-making process when choosing, as they allow organizations to make their brand known, consolidating it. Also, Cardoso and Pinto [14] highlight the importance of social networks by stating that for companies, social networks have become much more than social networking sites, they have become strong marketing and market research tools. Nowadays it is crucial that organizations are able to communicate efficiently with their target audiences, otherwise their survival is at stake [15].

Just like social networks, websites also have an important role in the visibility of an organization and are means that complement each other in a company's communication. For Nassar and Vieira [16], while a social network proposes to be a relationship environment for individuals, regardless of the specificity of the network, such as a social network focused on films or sports, the institutional website always proposes to address company topics or topics relevant to the company. Currently, it is rare to find a company or institution that does not have a website because websites allow companies and institutions to present themselves to their audiences, without intermediaries [17].

2.3. Analytical tools (SEO Strategy)

For a website to fulfil its role effectively in an organization's communication and function as a prominent means of communication, there are some Search Engine Optimization (SEO) strategies that allow you to improve not only the content presented but also, consequently, the positioning of the website itself. According to Rebelo [18] SEO emerged in the 90s, shortly after the appearance of search engines and is characterized as a set of strategies focused on optimizing websites and blogs. In other words, it is what will improve positioning on the search platform in organic results [19]. The literature highlights several advantages that SEO brings when properly applied. Paiva [20] considers SEO to be a widely used resource, as it is possible, through it, to position the website appropriately without resorting to investment and through organic and natural practices and for Neves, et.al [21] SEO is a free advertising that produces a better rate of return on what is invested when compared to other types or strategies of digital marketing. Rebelo [18] also considers that SEO is increasingly seen by companies as a way of taking their business further, a way of growing the business, since with SEO, potential consumers will have more ease of finding company content on the web. In this way, it is possible to state that in an organization it is important for the website to stand out and appear in the top positions so that it can be known and for this the first step is to make the company's website attractive to attract visitors, through the availability of content on the web and SEO optimization using appropriate keywords [22]. Therefore, for an organization's potential customers to be converted into customers, SEO strategies has an essential role in increasing the visibility and accessibility of content [23]. Google Analytics itself is a popular widely used tool for website analytics, including tracking website traffic, user behaviour, and conversions. As a free and comprehensive platform offered by Google, it's highly popular among website owners, marketers, and SEO professionals [38].

2.4. Business Intelligence

According to Ramalho [24], the term BI as we currently know it was born in the Gartner Group company in the 1990s, however the concept has older origins, based on the Management Information Systems (MIS) reporting systems of the 1970's. Ramos [25] refers that the concept had already been propagated for millennia and used by ancient people in which they analysed the possibilities based on the information provided by nature, where these phenomena determined the moment to decide the best alternative and was mentioned the first time in 1865 by Richard Miller Devens. However, it was in the 80s that BI grew and expanded in organizations, as intelligent business systems made it possible to automate tasks and processes, ceasing to be time-consuming, thus helping in the process decision-making process [26]. For Rodrigues [27], Business Intelligence (BI) emerges as a technology that enables the conversion of data into relevant information and allows you to combine a high volume of data and decision-making support applications that enable quick, shared and interactive access to available information, as well as its analysis and manipulation [28]. Pinochet [29] also defines BI as a technology that allows companies to organize enormous amounts of data, quickly, meticulously and with keen analytical precision, for better decision making and further states that this

approach presents itself as a solution that supports practically all of the company's processes. Business Intelligence is not just limited to delivering insights through views and reports, but the way in which data is collected, stored and processed is also important [30]. Over the years, this methodology has become the key to monitoring the planning, analysis and reporting processes, linked to the database of all sectors of a company: sales, marketing, production, finance, accounting and human Resources [26] and its main objective is to assist in the interpretation and analysis of data and information, thus allowing a better identification of opportunities and risks [31]. According to Chen, et.al [32] the opportunities associated with data and analytics in different organizations have helped generate significant interest in Business Intelligence and Analytics, which is often referred to as techniques, technologies, systems, practices, methodologies and applications that analyse critical business data to help a company better understand its business and market and make timely strategic decisions. BI solutions present a variety of functions, the most common of which include the creation of forecast scenarios, based on historical data and future perspectives, and the provision of analyses on the strategic direction of the organization [33].

3. MATERIALS AND METHODS

To accomplish the study objective, a descriptive exploratory study with a quantitative approach was conducted. To understand the impact of advanced data analysis tools, namely Business intelligence solutions, a professional training company in the north of Portugal was studied. XYZ Communications is a professional training company based in Lisbon, with a delegation in Porto, Portugal, specializing in training and improving the qualifications of individuals. In recent years, academics and researchers recognized the importance of harnessing data-driven insights to optimize their communication strategies and stay ahead in the competitive landscape. To achieve this, we implemented a Business Intelligence (BI) system to analyse and leverage data effectively.

The study Objectives are:

- 1) Understand how BI tools could gain deeper insights into consumer behaviour, market trends, and campaign performance.
- 2) Enhance decision-making processes by leveraging data-driven insights.

With these objectives, a BI solution was designed and developed that responded to the main objective of making informed decisions concerning the organization's digital communication. For the study to be carried out consistently, the CRISP-DM methodology was used, which is a sector-independent process model for data analysis and is composed of six repetitive phases, from understanding the business to its implementation [34]. The following image describes CRISP-DM phases [35].

Figure following on the next page

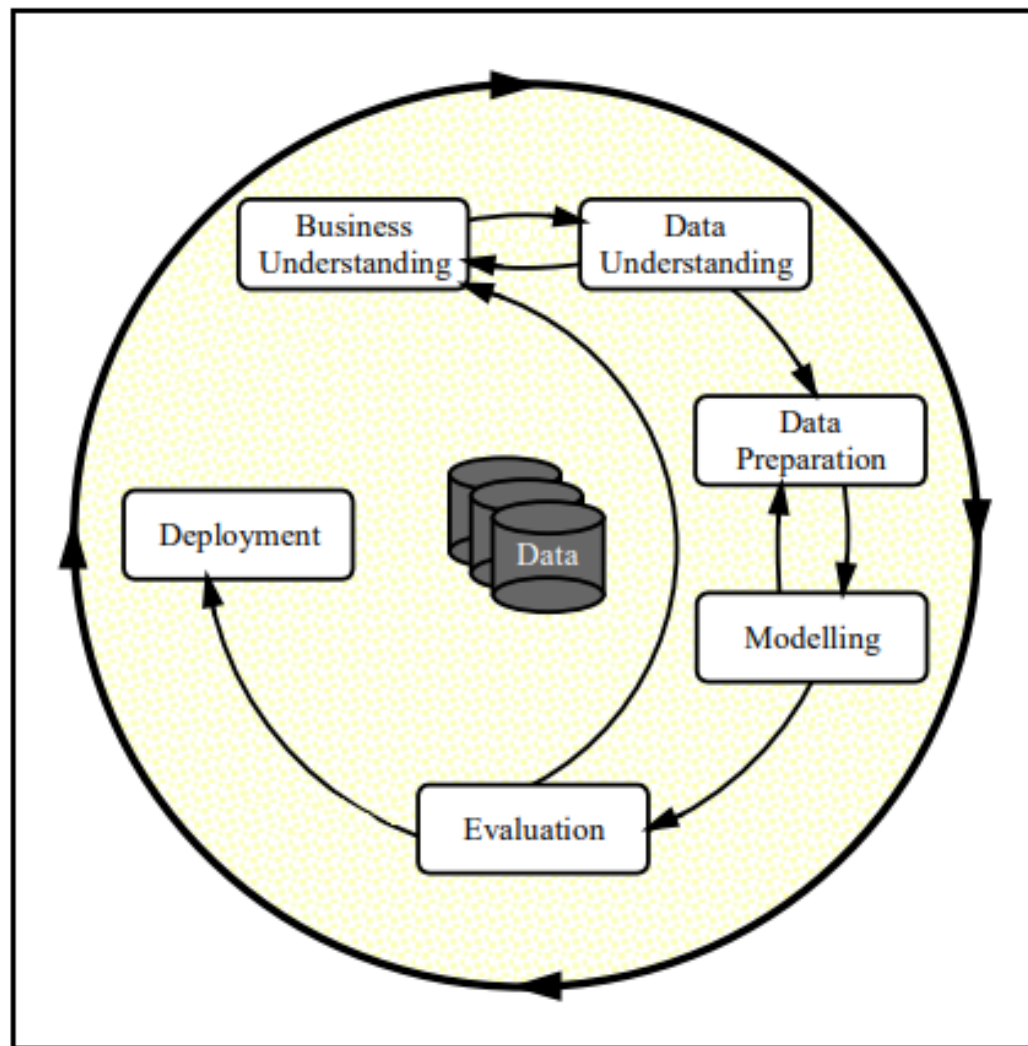


Figure 1: CRISP-DM phases

According to Martinez-Plumed, F. *et al.* [36] Business Understanding involves activities like understanding the business context, selecting a process of interest, understanding the available data and the data that is really needed: choosing the dimensions, the facts and building the Data Warehouse itself. This first step is achieved through the ETL (Extract, Transform, Load) process where data is collected from different heterogeneous sources and integrated into a unique repository. The second phase involves analysts and managers extracting value from the data warehouse by exploring data sources, analysing and filtering results until decisions are made.

3.1. Business Understanding

In the initial phase of a data mining project, called Business Understanding, analysts delve into understanding the business goals, defining and evaluating the problem at hand, and setting clear objectives for the data mining endeavour. The main output of this phase is the development of a comprehensive project plan. Industries facing strong competitive pressures, market saturation, and product maturity increasingly rely on data-driven insights to address a wide array of challenges. These challenges span from market analysis to ROI evaluation, credit risk assessment, fraud detection, and production scheduling. Understanding dynamic behaviour, whether in fault detection in telecommunications or analysing customer interaction with websites, is also a common concern across various sectors.

Considering the professional training company purpose that is to adapt its communication to the type of potential customer to which it communicates, the need arose to not only know the type of public that searches for its website but also know the flow of access to the website, so that they can adapt the strategy, making it more objective and segmented. In this context, depending on the organizations' objectives, Key Performance Indicators (KPI) or metrics must be established that allow the expected results to be achieved. KPI is understood as a set of metrics that aims to quantify the critical success factors included in the competitive strategy [26] and in this study the main communication and digital marketing KPIs will be highlighted. According to Nahr and Nozari [37], in the table below there are some indicators that are considered fundamental for analysing an organization's communication.

KPI	Description / Formula
Number of Sessions	The number of sessions started on a website or app
Number of organic searches	The number of new entries to the site occurred organically, that is, without the use of paid advertisements
Number of new users	The number of new unique user IDs that registered the first_open or first_visit event.
Number of users	The number of unique user IDs that triggered events.
Click rate	Percentage of times users clicked on your ad.
Conversion Rate	Percentage of times users performed a task previously designated as conversion

Table 1 - Digital Marketing KPIs

So that a BI solution could be built that could respond to the company's objectives and after an exhaustive analysis of all the metrics that GA provides for analysis, we decided to analyse the following metrics that will be the facts of the data warehouse: Number of sessions, Number of Users, Number of New Users and Number of Organic Searches. After defining the KPIs, some questions were defined to which the Data Warehouse was intended to respond, such as: What is the predominant age group that accesses the organization's website? What are the main cities where website users come from? or What is the predominant gender of users who access the website?

3.2. Data Understanding

During the Data Understanding phase, the focus is on activities like data collection, exploration, and quality verification. The primary goals are to become familiar with the data, identify interesting subsets, and uncover initial insights. Data screening is essential, especially when seeking predictors for a variable. Understanding the available variables and their associations is crucial, as is ensuring that the data cover a wide range of values for comprehensive analysis. The exploratory analysis of data was conducted in Google Analytics to gather information, followed by processing the data using a Business Intelligence (BI) solution, specifically the Power BI tool. In this analysis, two sets of data with different granularities were used. The first data set extracted from Google Analytics has daily granularity and allows the analysis of different dimensions such as the city and country of origin of the users, the type and operating system of the device they used to access the website, the date and the social network they came from. This data set also includes indicators previously established for analysis, such as the number of sessions, organic searches, users and new users. The second one represents the annual granularity and allows you to analyse the age range and gender of users, the city and country they come from, the year and also the number of sessions, users and new users. In the image below there are some examples of the data that was collected.

City	Country	Device Category	Operating System	Date	Social Network	Sessions	Organic Searches	New Users	Users
Maia	Portugal	mobile	Android	9 de fevereiro de 2023	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	5 de fevereiro de 2023	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	13 de janeiro de 2023	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	3 de dezembro de 2022	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	30 de agosto de 2022	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	20 de maio de 2022	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	2 de maio de 2022	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	22 de março de 2022	Facebook	1	0	0	1
Maia	Portugal	mobile	Android	16 de março de 2022	Facebook	1	0	0	1

Age	Gender	City	Country	Year	Sessions	New Users	Users
18-24	female	(not set)	Portugal	2022	667	240	317
18-24	female	Albufeira	Portugal	2022	14	6	10
18-24	female	Algueirao-Mem Martins	Portugal	2022	45	18	26
18-24	female	Almada	Portugal	2022	347	80	122
18-24	female	Alverca do Ribatejo	Portugal	2022	164	47	65
18-24	female	Amadora	Portugal	2022	359	97	155

Figure 2: Google Analytic's data

3.3. Data Preparation and exploration

Data preparation encompasses Extract, Transform, and Load (ETL) processes along with pre-processing activities such as data selection, cleansing, fusion, and integration. It's an iterative process involving feedback loops as insights from modelling may necessitate further data preparation. New variables may be derived to better suit analytical tasks (KPI), a process often termed feature extraction. Data reduction techniques, including feature selection and sampling methods, are employed if the data size is too large for efficient analysis. For all dimensions to be created successfully, the data went through a transformation process, such as eliminating unnecessary columns, eliminating duplicates and creating new columns for primary keys, also called surrogate keys.

To respond to the KPIs, the following dimension tables were identified:

- Dim_Gender (ID_Gender, Gender) where ID_Gender is the artificial key of the Dim_Gender dimension table and the Gender assumes one of two values (F,M);
- Dim_Age (ID_FaixaEtaria, Age) where ID_FaixaEtaria is the primary key of the Dim_Age dimension table and the Age are the age groups of the users (18-24, 25-34, ...);
- Dim_Country (ID_Country, Country) where ID_Country is the artificial key of the Dim_Country dimension table and Country represents a Country (Portugal, Spain, ...);
- Dim_City (ID_City, City) where ID_City is the surrogate key of the Dim_City dimension table and City represents a City (Albufeira, Almada, ...);
- Dim_SocialNetwork (ID_SocialNetwork, Social Network) where ID_SocialNetwork is the primary key of the Dim_SocialNetwork dimension table and Social Network demonstrate a Social Network (Facebook, Instagram, Instagram Stories, Glassdoor, Linkedin. Twitter, Reddit, Youtube, not set);
- Dim_OperatingSystem (ID_OperatingSystem, Operating System) where ID_OperatingSystem is the artificial key of the Dim_OperatingSystem dimension table and Operating System corresponds to different operating systems (Android, Windows, Windows Phone, Macintosh, Linux, iOS, Chrome OS, Blackberry);
- Dim_Time (IDDate, Year, Date, Day, WeekDay, Month, MonthName, Quarter, QuarterName) where IDDate is the surrogate key of the Dim_Time dimension table and the remaining attributes provide data regarding the date users accessed the website;
- Dim_DeviceCategory (ID_DeviceCategory, Device Category) where ID_DeviceCategory is the primary key of the Dim_DeviceCategory dimension table and Device Category corresponds to different types of devices (Mobile, Desktop, Tablet);

After the dimension tables were created, the fact tables were also created. As there were two data sets, two fact tables were created, a Fact_Analytcs (the main fact table) and a Fact_Auxiliar (the auxiliary fact table). The existence of an auxiliary fact table is due to the fact that there are two sets of data with different granularities, as not all data analysed in the study was collected with the same granularity through GA, as mentioned previously. The fact tables also went through a transformation process in which unnecessary columns were eliminated and new columns were added with the created metrics and dimensions. The image below shows the star data model built in Power BI.

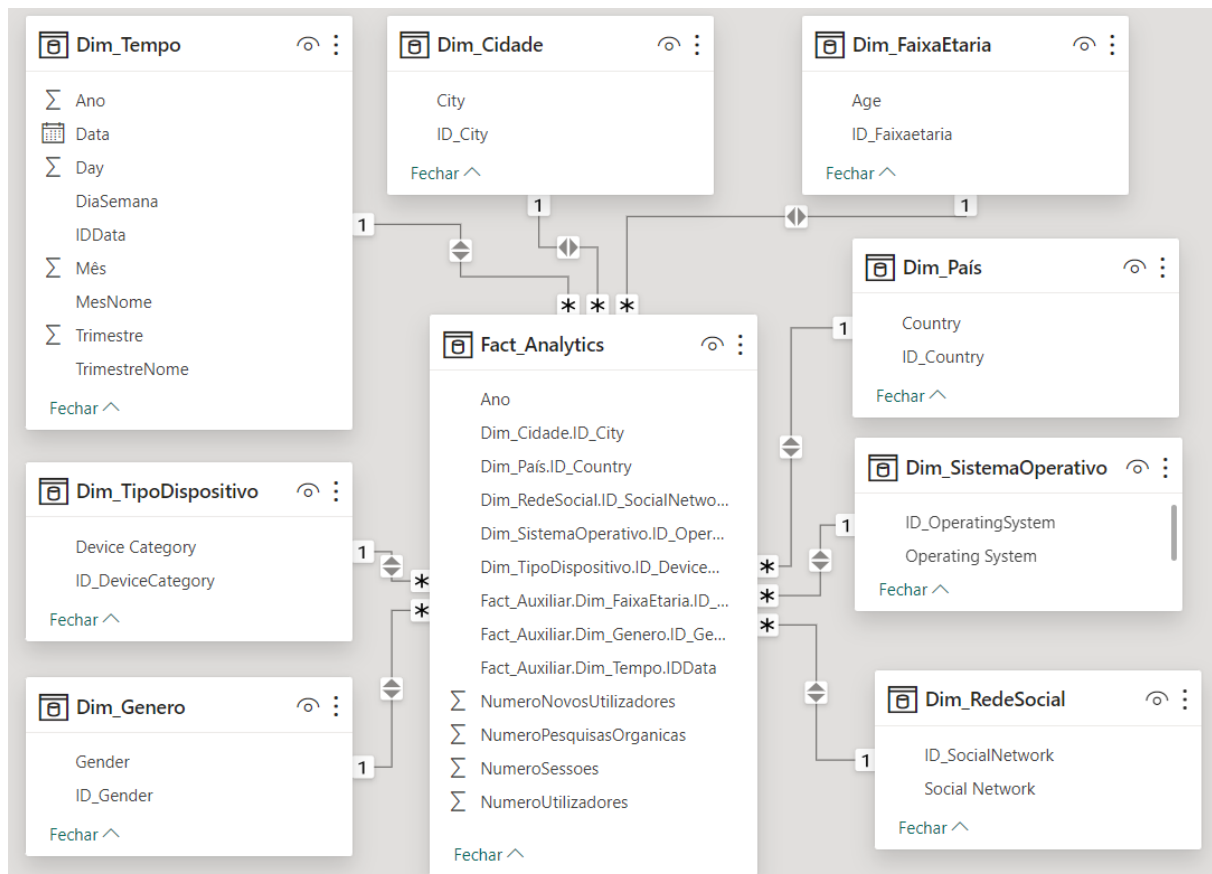


Figure 3: Communication star model in Power BI

After finishing the star data model, the dashboards were built and two metrics will be analysed: New users and Sessions. Data visualizations are numbered and will be explained below.

Figure following on the next page



Figure 4: Dashboard - New users by age, country, gender, social network, operating system, year, city and device category

In the dashboard above, it is possible to identify the predominance of the 35-44 age group of new users, followed by the 45-54 and 24-35 age groups (1) and Facebook is the main social network that attracts most the new users to the website (2). The data visualization 3 also shows that new users are mostly female. On the other hand, the dashboard also shows Portugal as the main country of origin of new users, however new users are also from countries such as Angola, Brazil, Spain and France, in smaller numbers (4). As the city with the highest number of new users, Lisbon stands out (6). Regarding the operating systems most used by new users to access the website (5), it is possible to identify Windows as the first operating system used, followed by Android and iOS, however the most used type of device (9) is mobile, followed by the desktop version. The last two data visualizations (7 and 8) show that the number of new users was significantly higher in 2022 compared to 2021 and 2023.

Figure following on the next page

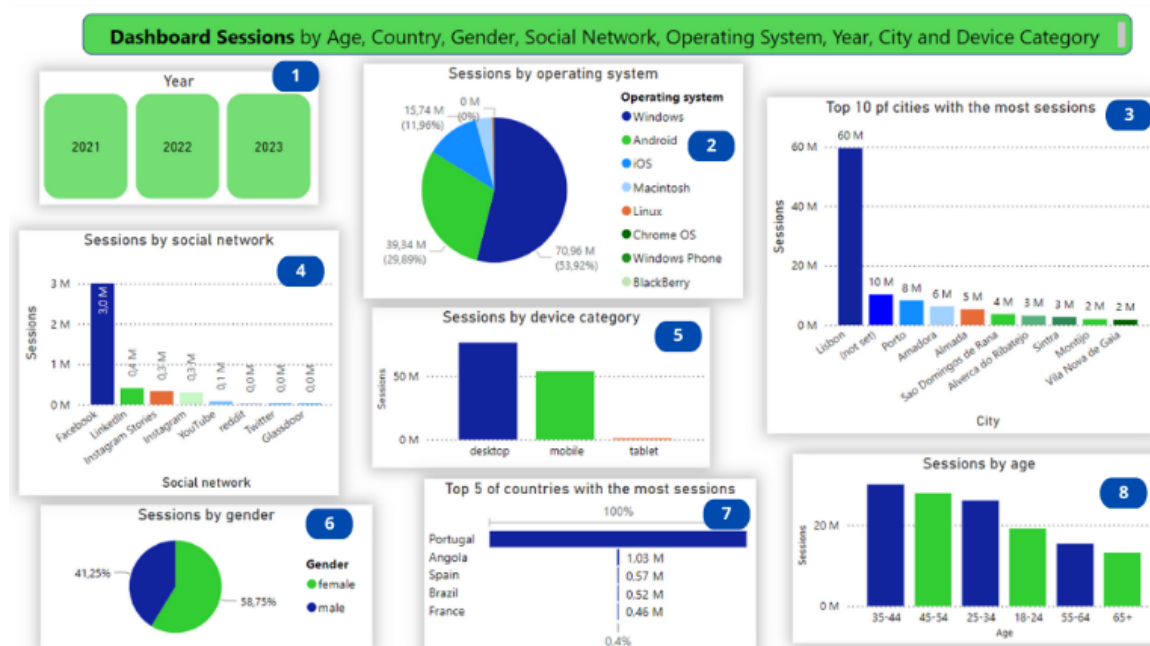


Figure 5: Dashboard - Sessions by age, country, gender, social network, operating system, year, city and device category

The first data visualization (1) is a filter that allows us to analyse different data between 2021 and 2023. Just like in New users dashboard and in Sessions dashboard the age group (8) and gender (6) in which there are more sessions are 35-44 and female, respectively. Also, Portugal and, consequently, Lisbon are the country (7) and city (3) from which most sessions to the website come from. Regarding social networks (4), Facebook has the highest number of sessions carried out, however, stands out as the second social network, contrary to the information on the new user's dashboard. The type of device used to access the website (5) also differs in the two dashboards because the session dashboard highlights the use of the desktop version, instead of the mobile version of the first dashboard. Finally, Windows continues to be the most used operating system (2) to access the website. This study encompasses only the initial three phases of the methodology, as the primary focus was on implementing a Data Warehouse for decision support. Future work will incorporate predictive analysis as the next phase of the project.

4. ANALISYS AND DISCUSSION

In the previous section, we have presented the main integrated performance dashboard visualisations using Power BI as a platform, where it is possible to find the analysis of several metrics that cope with the KPI previously defined as the most important metrics for the organization. A BI solution was completely developed for a real company case study, and a solution was developed based the CRISP-DM methodology. The development of systems facilitating analysis for decision-making within organizations is increasingly acknowledged as crucial for enhancing the quantity and quality of information available for strategic decision-making [49]. Additionally, the monitoring of key performance indicators (KPIs) plays a vital role within organizational contexts [48]. Finally, understanding the importance of using business intelligence to support the decision-making process in organisations allowed us to understand how a vast set of data with different characteristics can be interconnected through a data model, which will enable organisations to extract information about their business and help create and define different strategies to assist in decision-making processes.

It can be concluded that the development of a BI solution applied to the Digital Communication case study allowed us to carry out several analyses and build visualisations and dashboards that provide a better understanding of the data and contribute to the decision-making processes of organisations, in this case directly assisting the sales marketing department [39] [40].

5. CONCLUSIONS

A case study was conducted on professional training company in North Portugal focusing on Small and Medium-sized Enterprises (SMEs) was studied to provide valuable insights into the impact of digitalization on business strategies. Research has shown that digital platforms, such as social media, play a crucial role in communication strategies for organizations. Additionally, the implementation of digital components, like those from Industry 4.0, namely advanced analysis solutions, has positively influenced the organizational structure and competitive advantages of Digital Communications SMEs in Portugal. The methodology used to analyse the data was CRISP-DM methodology. It was concluded that the development of systems that enable analysis for decision-making in organisations has increasingly been identified as essential for improving the quantity and quality of information available for strategic decision-making in organisations, and monitoring performance indicators (KPIs) plays a vital role in the organisation [39, 40] and the development of a BI solution applied to the Digital Communication case study allowed us to carry out several analyses and build visualisations and dashboards that provide a better understanding of the data and contribute to the decision-making processes of organisations, in this case directly assisting the Communication. Future work includes Integrating various data sources into the BI solution proposed, including customer databases (CRM), social media platforms, and advertising campaigns, which is essential for providing a comprehensive view of the professional training company's digital footprint and enabling holistic data analysis and predictive analysis.

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EXPERIENCES AS A PART OF EXPERIENCE ECONOMY

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ABSTRACT

The aim of this paper is to present experience as an important element in the creation of new value. It is the individualisation of the experience through the perception of the person that leads to the creation of not just added value but a completely new one. The creation of new value is impossible at the level of experience and co-creation of experience; it must be realised by the user of the service by which the person maximises his benefits, expectations and final level of satisfaction. In other words, the experience is constantly being upgraded and improved. The modern tourist is no longer looking for a classic tourist product, but he is looking for the creation of an experience that is unique and personal. Such an experience is remembered and built upon with new experiences. That results from the personal interaction of an individual, not only with experiences, but with the created experience that should be the main product of a tourist destination today.

Keywords: *experience, experience economy, innovation, value, tourist destination*

1. INTRODUCTION

Social organisation and the degree of technological development of the society condition priorities and forms of value exchange. Understanding of tourism as a set of relationships and phenomena requires an insight into theoretical approaches of different social disciplines. Today, tourist cultures are manifold contradictory, constructed and reconstructed by means of mediation of experiences which occur within the context of tourist function. Cultures are no longer single, remarketed and homogenous phenomena which identify themselves with particular lifestyles (Clifford, 1992, Welsch, 1999). All cultures are subject to changes and transformations as a result of flows of people, objects and images outside national states' borders (Rojek and Urry, 1997). In the case of acceptance of economic function as a dominant function of tourism whose distinction provides crucial information for understanding of tourism, but also proves that this knowledge is insufficient and limiting as it does not say anything, or says very little, about different qualities of tourist experience (Rojek and Urry, 1997). Such an approach, therefore, in principle deals with the creation or co-creation of experiences with the aim to create additional and/or new values, basically neglecting tourist experience as the main product of every tourist travel with a repeated upgrade in consumption of a new tourist service.

2. EXPERIENCE ECONOMY

Societies of different levels of development condition individuals' needs of different rank (according to the Maslow's hierarchy of needs). Furthermore, social role, degree of education, motives, expectations and experiences greatly differ from person to person. Today, people who involve themselves in tourist flows are increasingly more experienced and express a larger number of needs which are more sophisticated and more complex. They are the result of societal progress and realisation of conditions for the possibility of need satisfaction. Social organisation, i.e. the society as a whole, defines generally recognised needs, and an individual, i.e. a person, creates a wish for differentiation from the rest of the society and realisation of something memorable. Pine and Gilmore indicate that the experience economy represents the fourth level in the development of economy.

The economic levels of development are perceived as (Pine and Gilmore, 1998): a) Agricultural economy – accent on goods, b) Industrial economy – accent on products, c) Service economy – accent on services, d) Experience economy – accent on experiences. The above not only gives a division according to the accent and medium of exchange, but also implies the progression of personal experience in each phase. Maximisation of value for money is achieved, which also implies a higher level of satisfaction. Applied to tourism, the development of tourist products based on experience as the key exchange value, requires an interdisciplinary approach. Further analysis imposes the distinction between comprehension of experience as a separate product and an aggregated set of experience economy. The absence of the experience economy factor in the creation of a modern tourist product realises decidedly negative results. Historically speaking, the category of competitiveness of the national economy has suppressed the once dominant category of comparative advantages. This is also perceived in observations of tourism, where added value progressively increases when competitiveness is based on the experience economy. Deregulated growth of the tourist offer irreversibly diminishes the exchange value of the resource basis and, accordingly, also the income from tourism. Designing tourist offer on the principles of experience economy also represents a regulatory phenomenon which not only protects the resource basis but, by reduction of negative externalities, also affects the quality of life of the local population (Stiglitz, 2000). At the global level, the concept of experience economy and its upgrade are still insufficiently theoretically researched and implemented. The complexity in definition of impacts arises from the approach, i.e. perception of individuals and the intensity of an individuals' involvement, i.e. people at all levels.

2.1. Experience

The basis for realisation of the experience economy is the experience as a complex category. This is why, before further considerations, experience and its nature is explained first, as well as its effect on a person, i.e. on a tourist. The realised experience in tourist flows is individual and subjective for each tourist. Realisation of experience and its qualification depend on motivation, perception, value, importance, satisfaction and lifestyle. Experience represents a psychological category, and is the subject of psychological study. Perception of experience is linked to the explanation of perception. By its definition that psychology is a science about experiences and behaviour, modern psychology changes that standard simple equation proposed by behaviourists (Petz, 2007:27), i.e. the equation presented by the S-R relation. The presented relationship explains that a stimulus (S = stimulus) triggers a reaction (R = reaction) and a middle factor of organism (O = organism) is inserted, giving a S-O-R relationship, which represents an illustration of the effect a stimulus has on an organism, which absorbs stimulus and which, in turn, results in a particular reaction. This is conditioned by psychic processes which have led to a reaction or those which do not even have an external reaction (such as thinking, memorising or learning). In the research of behaviour, the technique of indirect measurement has been used. The reason for this is that a person reacts more to the sense and meaning of a stimulus than to the physical characteristics of that stimulus. Within tourism flows, experience represents a reaction to inclusion in tourism flows. Observation of experience in psychology represents a complex activity and, according to the types, experiences are divided into (Petz, 2010): a) Cognitive (gnostic), which relate to the activity of objective world and the way in which that world feels, b) Emotional (sensitive), by which it is reacted to external circumstances by bigger or smaller comfort or discomfort and c) Motivational which, simultaneously with emotional reacting, urge a person to react, and the strength of that motivation depends on how important a particular stimulus is. All the three types of experiences represent a unique whole of experience realisation during inclusion in tourism flows. As a psychological process, it is possible to associate experience with the process of the perception of stimulus.

Perception is, therefore, an active process of organisation, integration and interpretation of sensory information, which enables acquaintance with and recognition of the meaning of objects, phenomena and occurrences in the environment. People do not have clear senses, but percepts – as senses are only elements of which a complete experience is made up of (lat. percipere = adopt). Perception is not only a sum of elements, but a structure of those elements, active processing of all received and already existing information, their interpretation which is based on the previous knowledge, memory, expectations, attitudes, motives, emotions and personality features (Petz, 2010). Certain people's perceptions related to the same things do not have to match, as they perceive objective reality differently. Under the influence of perceptual subjectivity, facts are less clear and less palpable. Conflict of attitudes occurs in everyday life, as objective situations do not affect behaviour, but the actual perception of that situation. The experience category can, therefore, be observed through different approaches. Experience exploration, i.e. realisation of experiences, is considered to be the process and reaction of tourists to their inclusion in different travel phases. A realised experience is presented as a multiphase category, realised within the phase of travel planning, the phase of travel, the phase of stay in the tourism destination and the phase of return to the emissive country. The perception of realisation and qualification of experience is related to products and services which are consumed within different travel phases (Jennings and Nickerson, 2006). The subject of the research observes experience in the theoretical part related to tourist products, tourist expenditure, qualification of experience and effect on the perception of competitiveness of the tourism destination. Within the tourism system, tourist product represents a complex concept which includes services, people, organisations and ideas with the goal of realisation of tourists' travel, stay and activities outside their familiar environment (Smith, 1994). The consumption of tourist products affects the realisation of experiences. Experience thus depends on the type of tourist product. Tourist product and realisation are observed at several levels, and according to the type of tourist product, as (Smith, 1994) are Formal tourist product, Generic tourist product and Enhanced tourist product. Formal tourist product represents the product which tourists perceive as purchased by them. Generic tourist product is, in fact, a real product which is consumed, while an enhanced tourist product represents a combination of the generic product, enhanced by any other added value. Tourist product represents the result of the process in which tourists, in different phases of their travel, use different services with the aim of arrival, stay and departure from the destination (information, means of transport, accommodation and attractions) (Gunn, 1994). Tourist product can be considered as a phase in realisation of experience, or even experience in its overall realisation. The success of a tourist product depends on its design and tourists' perception of the product (Smith, 1994). So, tourist product represents the totality of services and products which tourists perceive as attractive and associated with fulfilment of their expectations. Tourism and expenditure during tourist flows observe tourism as a form of expenditure. Tourism, therefore, can be observed as a specific form of expenditure in which changes occur in the expenditure structure (Laws, 1995). The concept of authenticity, i.e. authenticity of contents (of products and services) which are purchased affect expenditure during tourist flows. Tourists, therefore, expect authenticity in the destination (MacCannell, 1992) by comparison with pseudo-events (Boorstin, 1964). The search for authenticity in tourist destinations can produce also negative effects and pressure on sustainability and the life of the local community. Tourist expenditure, related to authenticity is, therefore, observed in relation to modern and postmodern. Modern tourists are seeking originality which is perceived through the authenticity of the presented content, while the tourists in the phase of the postmodern are focused on activities, entertainment and enjoyment and do not care about content authenticity (MacCannell, 1976, Urry, 1990, Choen, 1995), which suggests that tourists consume tourist products in relation to previous knowledge, experiences and expectations, which, later, in the tourist destination, leads to expenditure guided by

emotions and impromptu spending, looking for experiences and fun (MacCannell, 1976, Urry, 1990, Choen, 1995). Tourists expect a temporary break from everyday life through something unrepeatable, spectacular and unique. It is concluded that the activities for channelling the tourist expenditure structure within tourist destinations should be directed towards expectations and realisation of tourists' desired experiences. As subjective categories of individuals, experiences and realisation of experiences also condition their qualification. Qualification of experiences depends on tourists as individuals and their used services, perceptions and expectations. That is, qualification depends on the requirements, needs and wishes of tourists in relation to the realised benefits (realisation of experiences) (Jennings, 2006). Tourists realise experiences of different intensity which have different significance (Choen, 1979). In other words, they depend on the motivation of tourists, which affects the creation of contents. This is why a phased approach is used for qualification of experiences. It encompasses a pre-travel phase, phase of stay in the destination, and the phase of return from the destination (Vitterso et al., 2000). It can also be qualified through the anticipation phase, phase of travel, phase of activities in the destination, phase of return and the phase of gathering of impressions (Clawson and Knetsch, 1966, Vitterso et al., 2000). Such a phased approach is applied and adapted for the needs of determination of the relationship between the realised experience and the perception of tourist destination competitiveness. The phases in the realisation of experience are, therefore, identified as:

- 1) Phase of travel planning - Includes decision-making on the choice of the tourism destination in relation to the tourists' preferences, information availability, traffic accessibility and contents in the destination.
- 2) Phase of travel to the tourism destination - Includes activities of travel to the destination itself and transfers within the destination.
- 3) Phase of stay in the tourism destination - Includes activities related to the stay in the destination itself, use of accommodation capacities, use of services in the destination, entertainment and attractions, i.e. destination features and price levels.
- 4) Phase of return to the emissive country - Includes activities related to assessment of satisfaction and realisation of expectations from the realised travel.

With each stated phase, an experience is achieved which, in different travel phases, affects the realised experience. A phased approach in experience realisation encompasses different activities which take place in each phase of experience realisation. Such an approach facilitates the comprehension of different phases and the environment (each stated phase takes place in a different environment) in which each stated phase takes place, thus also realisation of experiences and what tourists perceive as a desirable result of experience realisation. Realised experiences depend on tourists who, following the consumption of services and activities in each of the stated phases, make an assessment of fulfilment of their expectations, i.e. of their perception of experience fulfilment.

2.2. Historical illustration of the experience economy development

Today, the experience economy as a concept, although today insufficiently researched and affirmed in modern business processes, dates back from the end of the 18th century. Such an understanding has been accepted due to the use of a system-based approach and defining of the phenomenon itself. Observed as an economic instrument for maximisation of benefits, profits and increase in competitiveness of the destination, the concept of experience economy rests upon experience. An experience is, therefore, completely dependent on the perception of the same event by an individual, group or several persons. Experience arouses action and reaction in relation to the degree of involvement. The occurrence itself and visualisation can be the result of a formalised event or, on the other hand, may be generated by exogenous factors.

Today's understanding and exploration of the concept of experience economy mainly repose on the comprehension of the concept of experience economy as an instrument for maximisation of benefits. In a certain form, the experience economy is connected to the character and work of the British philosopher and economist Jeremy Bentham (1748 – 1832) and, indirectly, also to Adam Smith (1723 – 1790). Also, an important theoretician who facilitated modern access to the application of the experience economy is George Katona (1901 – 1981). One of the earlier understandings were also provided by Alvin Toffler in his book *Future Shock* (1970). Toffler talks about the creation and structural changes in the future, where people will be willing to allocate their profits for the purchase of and realisation of memorable experiences. Moreover, in 1982, Holbrook and Hirschman join experience as an emotional category to products and services. Somewhat later, in 1992, Gerhard Schulze introduces the term of the experience society. Today's understanding of experience economy was, however, provided by B. Joseph Pine and James H. Gilmore in 1999, i.e. in 1998, and their interpretation is considered to be a starting basis for the application of the concept in practice. Although there will be more talk about models for application in the following sections, two experience economy theories will be mentioned in this section. The first theory was defined by Richard Florida as a theory which is based on the economic and regional development, while including the elements which contribute to the development synergy. In his work *The Rise of the Creative Class* (2002), R. Florida sets a theory based on three decisive factors, better known under the abbreviation of 3Ts (Technology, Talent, Tolerance). The theory includes the synergy of action of technology, talent and tolerance. The main focus is on the accumulation and attraction of human resources, i.e. staff who are educated and motivated. Considering the above stated factors, it is ensured that, with their knowledge and skills, coupled with innovations, human resources realise a positive trend of economic growth. Accumulation of competitive and educated human resources in one geographical area leads to attraction of investment into that area. In order to affect the recruitment of the desired structure of labour, it is necessary to have a level of diversified society, with a steady level of the elements of cultural offer, passive and active participation of individuals and a high quality education system. This, of course, with participation of the local self-government and state organisations for establishment of terms and an efficient system which will enable competitiveness and attractiveness for the needed structure of people. Contrary to R. Florida, the second theory is set by B. Joseph Pine and James H. Gilmore in their book *The Experience Economy* (1999). It is established that, at this degree of development, society as a whole is no longer satisfied with manifestation of goods, products and services as the end form of the measure of satisfaction of an individual. Such a situation arises from the occurrence of structural changes in the demand elements and changes in expectations, motives and in the perception of satisfaction. Essential explanation of the concept of experience economy is not one-dimensional and the explanation of the concept perceived in the B. Joseph Pine and James H. Gilmore's paper is still most appropriate, where the experience economy is defined as the fourth phase of development of the economic system and where experience is the basis of exchange. If we look at the historical presentation, a level of manufacture, industrialisation and the transition into the phase of service economy can be noted. Considering the incurred changes, the experience economy represents an upgrade of the service economy. Within the context of the experience economy. The differences were determined using the subject and nature of products, strengths of sales and demand, as well as the realised added value and business subjects. Experience economy represents the creation of new value (economic and social), where experience is the integral part and the starting point of the product or service, and not only their upgrade or added benefit. Taking into consideration the dominant motive for travel as a request for the acquisition of an unrepeatably, unique, experience, and parallelly with an increase in travel, we come across an expansion of an increasing number of tourist products based on the experience economy.

Following socio-economic trends, i.e. trends of recorded changes in the form of a demographic picture of the society, better education and a higher standard of living, changes are also noted in the structure of demand for products and services. Transition occurs from economy of services to the experience economy and increasingly frequent purchases of goods and services are replaced by purchases of experiences. Such purchase represents specific exchanges of value for money, which is characteristic for the traditional understanding of the experience economy. The development of tourist products based on experiences as the key exchange value requires an interdisciplinary approach which, apart from applied marketing activities and competitive positioning through identity affirmation, leads to the tourist offer positioning from the point of view of the experience economy. Therefore, systematic activity of elements of offer must facilitate the creation of memories, and those memories then become experiences, i.e. experiences become products, i.e. services. Such perceptions arise from the research on the behaviour of consumers themselves or users of products and services. In other words, the initial papers define purchase due to a meaningful and realistic observation and thought process (Holbrook, O'Shaughnessy, Bell, 1990). However, with the emergence of the criticism that cognitive models insufficiently define and explain behaviour (Hoch, 1991, Holbrook and Hirschman, 1982), a change occurs in the study starting point. The accent is placed on experience and expenditure. Even Levy (1959) states that people do not buy a product for what it is intended for, but for what they think it represents, i.e. what it represents for them. Thus, in 1982, Holbrook and Hirschman define that products have two main functions and that their indivisible unity is necessary. They define usable and hedonistic product functions. Usable functions represent what products or services are literally intended for, and hedonistic ones are what users describe as entertaining, fantastic and pleasant for perception. So, the hedonistic function depicts subjectivity and individualisation of both products and services. In 2000, Dhar and Wertenbroch prove that, by a usable function in the consumption itself of goods, a neutral position in consumption of experiences is retained, while hedonistic aspects represent a way to improve in the experiential component of expenditure itself. Despite the specified efforts, the academic literature determines a deficiency when it comes to a systematic approach to observation of the realised experience (Gentle et al., 2007). By consuming tourist services in relation to experiences, expectation and realised experience, the importance was noted of the intensity of individual perception of the actual experience and the function of use. In conclusion, the experience economy is, therefore, not a generic creation of an experience, but is based on the individualisation of a personal experience of an individual in their social environment, indirectly creating a tourist experience.

3. EXPERIENCE AS A BASIS FOR CREATION OF VALUES

The experience economy is a term by which it is aimed to conceptualise a new trend in the economic development, where the accent is put on a person. People seek their position and their own identity in modern society through maximisation of their expectations, which have originated from motives, areas of interest, degree of education and affiliation with different social groups. The term of experience economy, therefore, is a much wider concept than exclusive markets of entertainment, culture and tourism, although they are included there. The use of experience economy algorithms can also be a competitive advantage in market penetration. Maximisation of profits is facilitated from the saturated market. So, while in the times of manufacture it concerned the market of unknown products, industrialisation and industrial society brings serially produced and standardised products directly to the customers. The next upgrade appears in the form of service economy which provides their clients with adapted services, while the experience economy offers individualised and unique experiences to guests. In modern business, market success of a product depends on the experience which a product or a service create for the user.

Each different level of intensity of the realised experience brings a new level of added value and satisfaction. The development of new technologies and societal progress as a whole result in ever increasing exploitation of experiences. The component of experience, therefore, increases the market value of the product itself or a service. Although such an approach is still in its initial phase and represents more a part of a particular strategy than merely a strategic orientation of the economy, an increase has been noted of commercial exploitation of the concept of experience economy. Within all that is stated, it is necessary to more clearly define the term of experience observed from the aspect of tourist travel. Although seemingly simple, this question remains very much complex. At the beginning of the 50's of the 20th century, psychologists were dealing with the issue of human need for realisation of experiences and witnessing of the reality. In 1943, with his theory of motivation and hierarchy of needs, Maslow concluded that when individuals realise all the levels of satisfaction, a need emerges for self-actualisation, which represents the very top of the hierarchy of needs. In recent times, a consensus has been reached that the consumers' experience is multidimensional, but measured within the holistic approach (Schmitt, 1999, Gentile et al., 2007). This arises due to the exposure to different influences, of which some are found only at the subconscious level. Thus Schmitt divides influences into five dimensions: sensory experience (sense), emotional experience (feel), creative and cognitive (think), environment, behaviour and lifestyle (act) and identity, affiliation (relate). In 2007, this division was upgraded by Gentile and others by a dimension of pragmatism which, in essence, represents a practical act of action. Max Wertheimer (1880 – 1943), the originator of the "Gestalt" school of psychology, was the first to apply it in the explanation of the phenomenon. According to that study, human brain functions according to the holistic principle, and not partially. Each mind component is therefore observed as a part of dynamic and dependent relations. As a result, it is derived that most of personal perceptions, expectations and experiences is seen in the holistic way. Thus, for example, Navon (1977) concludes that human perception is global, including all physical, sensory and cognitive aspects into one holistic unity. Pine and Gilmore (1998) identify four dimensions of experience, differentiated into two levels. The first level defines the level of involvement (active vs passive) and the second, an individual's wish to participate (acceptance vs rejection). Experiences, i.e. perception and the meaning of experience, is extremely individual and broader generalisations are not possible, except in the case of multidimensional observations. The levels and intensities of individual's involvement differ in the same occurrences, such as the death of a relative, pleasure, birth of a child and they differently affect the realisation of experience. Within such observations we can divide them into those which are personal, personalised and those which occur within a wider social context. Moreover, perceptions can spread also to those experiences for which a certain sacrifice is made in exchange for expectation, such as consumption of specific products or services. All experiences, therefore, are individual, some more or less within a social construct or cultural. The common link to all the categories is that they are extremely susceptible to the emotional influence and that they affect the realisation of, let us say, a new person, discovery of new things, exploring the unexplored. Kelemen (1974) states that, together with the emotional category, excitement provides the link and desire to advance. So, the main product in the destination is experience. After the term of personal experience has been explained, it is necessary to put it and direct it into a particular context. Creation of meaning presents a process which starts with perception through all the senses by linking emotional categories which then gives a unity. It is a continuous, interactive process of participation and rejection, action and reflection, from causes to consequences, which realises the meaning and creates a context for an individual for his life activity (Boswijk et al., 2005). Experiences are not material and physically tangible; they are immaterial and extremely subjective. Correct identification of the starting basis and accurate formation of different phases of the process is essential.

Within the defining of the principles, it is necessary to start with the observation of the experience economy of the first generation, i.e. it is necessary to know what and how it affects a person. Five first-generation principles are stated (Pine and Gilmore, 1999):

- 1) *Theme* – defining of a story, context and the theme itself which roughly describes and explains a possible realised experience.
- 2) *Harmony* – all the impressions must have a positive context. It concerns individuals and they are not shared by the whole group. It is necessary to identify the factors with a negative sign.
- 3) *Eliminate negative cues* – elimination of negative influences starts, even what affects the perception and spoils the general impression.
- 4) *Memorabilia* – the need to create symbols and souvenirs which will, ultimately, be used as the initiator of memories and re-awakening of old feelings.
- 5) *Engage all five senses* – although all is often based on visualisation, it is necessary to switch all your senses in order for the feeling to progressively increase.

Within the creation of the second generation, depending on motives and awareness (Boswijk et al., 2005), a sixth principle is added:

- 6) *Naturalness: one whole* – the whole concept must give the impression of relaxation, spontaneity and originality. Within putting it into the concept and observation it concerns co-creation of experiences.

For utility maximisation and introduction of innovations, Prahalad and Ramaswamy (2002) form the so-called DART (Dialogue, Access, Risk assessment and Transparency) principle. So, dialogue represents interaction, which requires a specific location where both sides could come together to carry out the interaction, such as tourism destinations. Such an approach includes free access to information. Risk management includes minimisation of risks which a user bears, or dangers which can threaten him. Transparency represents clarity in business processes and the formation of corporate socially responsible behaviour. The DART system in the form of blocks must be perceived as a combination of all the blocks. The value then is no longer defined by the offer, but it is individual.

4. EXPERIENCE ECONOMY AND TOURISM

Expansion of tourist travels, fast and expansive growth of the tourism industry, conditions of globalisation and innovativeness confront the tourism industry with product differentiation. New requirements of the tourist demand condition the level of profit from tourism and even pose the question of market cost effectiveness. In such circumstances, where competitiveness is extremely important, even critical, the challenge is presented for understanding and more elaborate defining of tourist experience (Perdue, 2002). For a more detailed understanding of the concept of experience economy, tourism is the very best example of the concept application. The first applications were implemented at the beginning of the 70's of the 20th century (MacCannell, 1976, Dann, 1977 and Choen, 1979). It is, therefore, considered that tourist experience represents a unique, indivisible entity, pronouncedly filled with emotional factor and containing almost immeasurable personal value. Tourism facilitates the realisation of an alternative experience of time spent far from everyday life, set routines and familiar, stable environment (Wang, 2000:216). Tourists wish and expect a unique, authentic experience (MacCanell, 1976). According to Sternberg, tourists are *tourists* because they wish to substitute, compensate their everyday lives with the spectacular, foreign or ancient (Sternberg, 1997:954). Tourists wish to bring into their lives something exclusive, unrepeatable; finally, they wish to feel special and chosen.

The tourism sector fulfils these needs through the offer of tourist products, given that tourist travel is still primarily consumed due to individuals' hedonism (Otto, 1996). Literature and researches which observe or explore the application of concepts in tourism can be put into two groups. The first group of researches is focused on personal and affective characteristics of tourist travel, i.e. occurrences that realise it (Hull and Harvey, 1989, Beeho and Prentice, 1997, McIntosh and Prentice, 1999, Schanzel and McIntosh, 2000). The second group studies leisure activities and high-risk activities such as extreme sports (Arnould and Price, 1993, Celci et al., 1993). Although there are many researches in literature which study tourist experience from different aspects (Jackson, White and Schmierer, 1996, Prentice, Witt and Hamer, 1998, Li, 2000), the above two groups are the most significant. Although mutually different, all the researches stress the importance and need for the study of tourist experience, and later also the concept and perception of the experience itself. Implementation of the concept of experience economy as a basis for competitive positioning of the tourist offer, i.e. tourism destination, has as a consequence added values with realisation of a multiplicative effect of tourism. A higher level of economic development, although with some deviations, is most often implied by as high as possible a share of the services sector in the GDP. Therefore, according to Pine and Gilmore (1999), the share of the services sector in the total GDP of the national economies represents one of the important indicators of economic development. The levels of economic development, depending on the subject of exchange of goods, assets, services and experiences as a differential factor, determine the level of the economic development of the economy. Pine and Gilmore (1998) conclude that services and products are becoming increasingly oriented towards utility values and that, as such, do not contribute to the creation of added value. This is why each of those forms should be supplemented by unforgettable memorabilia of experiences. As is also stated in the previous part, and in support of the theoretical theses, tourist experience, as an indivisible part of the experience economy and realisation of the experience itself, identified within the four dimensions of experience, better known as the 4Es, i.e. Education, Escapism, Entertainment and Aesthetics. The dimensions of entertainment and aesthetics, therefore, include passive participation and do not have any influence on the creation of experience, while escapism and education, as the dimensions, include active participation, where individuals represent the central personality in the process of experience realisation. It is pointed out that each of the four dimensions ultimately creates a framework for optimal realisation of the experience (Pine and Gilmore, 1998). In other words, it is pointed out that, often, the best realisation of the experience in most cases is co-created (Gentile et al., 2007). As an indivisible part of the experience economy and realisation of the experience itself, experience is identified within the four dimensions and applied to tourism.

4.1. Tourist in the experience economy

Tourist experiences cannot be purchased; they can only be directed or adapted. Nobody except the tourist himself has a direct control of the strength of perception and motive and, finally, his own value scale of what is experienced. Tourists, therefore, independently combine the elements, such as time and skills into the pre-consumer set for the creation of experiences (Rustichini and Siconolfi, 2004). When a tourist joins the tourist flow, nobody knows the result of the realised expectation or the intensity of what is experienced in advance. This is why a tourist offer must be directed towards the creation of the experience which satisfies the current tourists' needs. The tourist product components, tourist product and tourist service must be conceived in the manner that they increase the level of the realised experience. That is to say, the value of what is experienced presents functional orientation of an individual and his elementary, social and intellectual needs, with the aim of realising excitement in the destination. In the papers which include the research of the hierarchy of needs (Maslow, 1987, Lavoie 1987) it is concluded that individuality in needs depends on the individual, i.e. tourist.

The preconditions which a tourist has to meet before the process itself are categorised into four categories: time, skills, goods and services. Time is the basic resource which, with a certain amount of financial means, must be available so that the person can join the tourist flows themselves. An individual's skills and creativity represent an important resource of the realisation of the experience itself, i.e. of the increase in the intensity of interactions and perception of what is available. In order for a specific experience to take place, it is necessary to have also certain tools for that realisation. Services which appear in the process can be of a wide range and do not have to be exclusively intended for that particular individual, but also to a wider community or other tourists. Tourists, therefore, have to be willing to take part in the use of inputs which are given through the placement of the tourist products themselves, and which represent a basis for the creation of excitement, experience and fulfilment of expectations. In relation to the latter, it can be concluded that there are three main groups which differently perceive and differently use the tourist product elements. The first group is directed towards the consumption of time, goods and skills, but not services (for example, participants in nautical tourism). The second group is directed towards excitement and active consumption of time and, in a lesser measure, consumes goods and services. The third group repeats the visit due to acquisition of skills and risk minimalisation by staying in, for them by then, unfamiliar surroundings. The stated division is similar to the division of tourists with the accent on the area of interest. It distinguishes tourists of general, combined and special areas of interest. The aggregated tourist experience and the realised experience represent the value which affects the satisfaction and the perception of the increase in the value of stay in the destination itself.

4.2. Innovations and experience economy

The complexity of the concept of experience economy and its elements requires a closer determination of innovation with the explanation of the term of co-creation and illustration of the elements of networking. Innovation can be defined as a complex process where organisations transform an idea into a new or improved product, service or improvement process, competing or successful differentiation in the market (Baregheh et al., 2009). Joseph Schumpeter (1961) focuses on the role of innovations in the economic and social development and explains innovation as a process of development in which the individual approach is contained. Innovation in tourism is generally characterised as distancing from the usual business practice of the tourism sector, with an accent on quality (Hjalager, 2010). The latter implies that innovation does not represent only the conceptualisation of a new idea or design of a new product or service, but that it represents synergy and provision of a content. Such a manner of consideration leads to the term of open innovations whose origin is in the marketing literature (Vargo, Lusch, 2008). Vargo and Lusch cite orientation towards the service which realises satisfaction. The latter implies that the term co-creation represents a marketing strategy, i.e. a business concept which in its origin has the cooperation of the elements of offer and demand and the creation of a mutual added value. In other words, experience co-creation becomes a basis for defining a higher level of value and the foundation of future innovations, i.e. it leads to the level of experience economy of the second generation (Prahalad and Ramaswamy 2004). Research of innovation processes in tourism represents a category of a recent date (Hjalager, 2010). The innovation paradigm in tourism is not based on technological changes, but on the changes in behaviour (Sundbo, 1997).

4.3. Quantitative measurements

Within the research whose results are quantified, and equally within the researches based on the concept of the experience economy, standard multiple factor analyses and standard econometric techniques are being conducted, such as calculation of regression and correlation between variables.

Researches are carried out using the technique of examination and observation using seasonal indices. Furthermore, application of the experimental method is expanded. Within this section, models for description of qualitative variables which impact the creation of experience will be explained more closely (Model 4Es and The Experience Wheel Model). One of the models, Creative Class, represents one of the strategic orientations of the national economy at the macro level. In order to predict the persons with an interest in involvement and creation of experience within the experience economy with an increase in profitability and satisfaction, three models will be shown: Creative Class Model, 4Es Model and The Experience Wheel Model.

- *Creative Class Model* - A model of a very questionable possibility of survival, especially within small national economies. The model is used to improve profitability and realisation of economic growth. It is an index-based model which includes the indices of technology, tolerance and talent (creativity). The model target group is directed towards open-minded persons with a higher level of education and a high level of creativity. Its implementation requires the skill of creation of a particular environment which would be directed towards a specific target group. The model requires investment in schools, universities, culture and constant innovations. The economic policy instruments must be directed towards the facilitation of investment in such a form of content. It can be applied in the cases when labour, i.e. human resources, become a basis of the economic growth and development.
- *Model 4Es* - The 4Es model is the most widespread model which was proposed by Pine and Gilmore. The main idea, i.e. the starting point of the model, is experience which can be of different kinds and different degrees of intensity. The highest value of the experience will be achieved when all the four dimensions are activated. The model can be used as a tool for the creation of experiences, but it can also direct the investment towards new market niches.
- *The Experience Wheel Model* – With this model, the value of experience is measured. The main advantage of this model is that several influence factors can be measured using it. To each dimension, a scale between 1 and 5 is joined, where 5 is excellent and 1 very poor, and these dimensions can also be expanded. The most frequent dimensions are: entertainment, education, aesthetics, escape, availability, acceptability, participation, the senses of touch, sight, smell, taste and hearing. In the measurements which are applied in tourism, this model is used before and after the visits, and then parts of a tourist product are adapted in relation to the target group.

The described models facilitate examination and research of the dimensions of experience. Based on the aforementioned, it is concluded that it is possible to create experience with control of quality of the content and, at the same time, measure the level, i.e. value of the experience. The stated models (except the Class Model) are extremely applicable in the interaction of tourist offer and demand for realisation of the co-creation of experience and realisation a higher level of added value. They, as instrumentation, enable the tourist offer elements to recognise more recent needs and wishes of tourist demand and to, with the content innovation, maximise benefits for both sides. Moreover, flexibility in their application facilitates simple adaptation of the instrumentation to specific and non-standard situations in relation to the subject of research. In other words, the premise that the realised experience is the subject of research, but that experience becomes the main tourism destination product, is established.

5. CONCLUSION

Although, as a phase in the development of economy, the experience economy represents an important factor in the realisation of added value in the form of realisation of expectations and realised experiences, the created experience becomes the only measure of tourist service excellence, acting primarily with its competitive character perceived from a subjective focus of

a person who uses the service and who assesses it on the grounds of all previous created experiences. What is confirmed, therefore, is that such an approach without the co-creation process and mutual acting of the stakeholders is almost not possible, primarily because each new consumed service defines a basis for comparison. In other words, experience is continuously upgraded and improved, and it is impossible to, for the tourist offer elements, create a standardised experience which would satisfy the expectations of the persons who are involved in tourism flows. Therefore, the only natural processes are detection and quantification themselves of the intensity of the experience, where we have the algorithm of the experience economy in the creation of added value, and the upgrade is the experience economy with the creation of a completely new, unique and personal added value.

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ETHICS IN ADVERTISING: PERCEPTION OF CROATIAN CONSUMERS

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ABSTRACT

Ethics and ethical considerations seem to become crucial in today's business environment, especially in the context of responsible marketing communications, particularly advertising. The increasing saturation of traditional advertisements has led to more engaging and aggressive marketing communication methods used by advertisers today, often crossing ethical boundaries in the process. It is important for businesses to uphold ethical standards in their advertising practices to maintain trust and credibility with consumers. Adhering to ethical guidelines not only benefits the company's reputation but also contributes to a more sustainable and ethical marketplace overall. Although there are generally numerous research papers on ethics in advertising, recent papers on this topic referring to Croatian market are relatively scarce and the topic is still not sufficiently investigated so far. This paper aims to explore the perception of Croatian consumers about the ethical aspect of today's advertising. Apart from the theoretical study, the paper covers the methodology and results of the quantitative research that was conducted online on a significant sample of Croatian adult consumers. In general, the results indicate that the ethical aspect of advertising is indeed important to Croatian consumers who are well aware of the influence that advertising has on their purchases.

Keywords: *ethics, advertising, advertising ethics, perception, Croatian consumers*

1. INTRODUCTION

In today's competitive environment, companies are constantly facing new challenges, among which is undoubtedly shaping a better approach to market communication with their consumers. The abundance of advertisements that consumers are surrounded by is undeniable, often to the point of exaggeration in order to attract greater consumer attention, pique their interest, and ultimately persuade them to purchase the advertised product. Kraljević and Perkov (2014, p. 236) agree with the abovementioned assertion, claiming that "consumers and message recipients are daily exposed to a multitude of advertising messages that are becoming increasingly aggressive and often exceed aesthetic, ethical, and general social norms". Therefore, Antolović and Haramija (2015) emphasize the goal of studying ethics in advertising, which is to understand the ethical standards and professionalism that are necessary in today's business, especially for companies involved in advertising and message creation, including advertisers and advertising agencies. In a world where profit has become the main motivator of business, business ethics are constantly being questioned due to the diversity and alignment of interests between individuals and the goals of companies (Martinović, Majić, 2009). As highlighted by Antolović and Haramija (2015, p. 118), "one of the special tasks of ethics is to establish the entire advertising industry on the best practices that take into account the balance of company goals, ethical standards, community interests, and the rights and freedoms of individuals". Since advertisements aim to attract potential consumers for maximum profit, advertisers often resort to unethical methods, manipulations, stereotypes, and lies in their advertising to convince the public that the advertised product is essential in their lives (Labaš, Košćević, 2014). It is precisely through these manipulations, unjustified and prohibited advertising techniques, that advertisers seek to influence consumers' attitudes towards their products, leading to numerous examples of unethical advertising in today's market communication, both globally and locally.

Žanetić (2014) emphasizes that advertising ethics is a relatively young ethical discipline, generally understood as applied ethics and negligibly present in Croatian scientific literature. The significance of this topic for the Croatian market and the insufficient number of recent and relevant research papers represent the main gap and the primary motivation for the research conducted for the purposes of this work, whose main problem lies in the lack of awareness of consumers' perception of the ethical aspect of advertising in Croatia. Following the identified issues, research objectives were defined: (1) to determine if advertisements are important to Croatian consumers; (2) to determine if ethics are important to Croatian consumers in both private and business contexts; (3) to establish whether Croatian consumers are aware of ethics in advertising; (4) to ascertain if Croatian consumers consider ethics in advertising important. Following the set objectives, the following hypotheses have been formulated for the research topic:

- H1: Advertisements are significantly important to Croatian consumers.
 - H1A: Croatian consumers notice advertisements in the media.
 - H1B: Croatian consumers believe that advertisements significantly influence their purchases.
- H2: Croatian consumers generally consider ethics important, both in private and business contexts.
- H3: Croatian consumers are aware of ethics in advertising.
- H4: Croatian consumers consider ethics in advertising important.

The initial assumptions are defined based on qualitative research conducted on a sample of Croatian experts in ethics and ethicality in marketing communication, and finally verified by the results of quantitative research, as elaborated in the methodology chapter of the paper. As a result, conclusions were drawn and recommendations were created for advertisers and advertising agencies on the Croatian market.

2. THEORETICAL DETERMINANTS OF ETHICS IN ADVERTISING

2.1. Ethics and business ethics

The contemporary business environment is characterized, among other things, by numerous challenges and ethical dilemmas. Therefore, the question of ethics and morality is not only considered in a private context but is increasingly important for modern businesses in terms of business ethics in their operations. The concepts of ethics and morality are often used interchangeably, although they are not the same in principle. Ethics and morality are complementary concepts since ethics is the science of morality, and the subject of ethics is morality (Jalšenjak, Krkač, 2016). "Morality (lat. *moralis*) is a system of unwritten social norms that determine the way of behavior in a particular social group or community, based on customs and generally accepted criteria for evaluating actions from the standpoint of principles of good or evil"¹. The widely accepted definition of ethics is "the science of morality as a social phenomenon expressed in concrete human actions within the framework of rules, maxims, and civilizational principles of a society" (according to Greek ἠθικός)². The same source defines ethics as "a set of principles of moral (ethical) behaviour of a society or social group based on fundamental social values, such as kindness, honesty, duty, truth, humanity". Or simply, "ethics is a rational and systematic attempt to find the difference between good and evil" (Antolović, Haramija, 2015, p. 73). By combining ethics and economics, a new scientific discipline called business ethics emerged in the 20th century.

¹ Croatian Encyclopedia. Retrieved April 4, 2024, from <https://www.enciklopedija.hr/clanak/moral>

² Croatian Encyclopedia. Retrieved April 4, 2024, from <https://www.enciklopedija.hr/clanak/etika>

It became a subject of academic research in the second half of the 1980s, and in the 1990s, an increasing number of global companies started incorporating ethics into their business practices, considering it important for their development and survival (Dujanić, 2003). In this way, business ethics has become a part of modern business practices, as claimed by the same author. Therefore, "business ethics is a type of applied ethics, or the application of general ethical principles to the specific field of business" (Krkač, 2007, p. 63). Antolović and Haramija (2015) explain that business ethics is the result of considering the relationship between morality and economics, namely, reflecting on the moral status of economic activities and practices, as well as the moral characteristics of market relationships. Furthermore, the authors emphasize that business ethics ultimately seeks to distinguish between good and evil in business, through systematic reflection whose result is shaped parameters for morally correct and accepted behaviour. Specifically, in a business organization, each employed person must consider three questions when making an important decision that may involve an ethical dilemma: (1) Is it lawful? (2) Has a balance of relationships been achieved? (3) How will I feel afterwards? (Blanchard, Peale, 1990). In this regard, any situation that is morally problematic and in which an individual must consider what is the right thing to do is considered an ethical dilemma (Ćorić, 2015). However, when it comes to making decisions in ethical dilemmas, there are few factors that are measurable and predictable, so the individual must accept the decision based on their own judgment because there is no universal method that offers the correct answer (Tomažić et al, 2011). Aleksić (2007) confirms that marketing professionals face ethical dilemmas on a daily basis, namely morally questionable situations in market communication, especially advertising.

2.2. Advertising

Advertising should primarily be viewed within the paradigm of integrated marketing communication, as defined by Belch and Belch (2018) as a comprehensive communication strategy used to coordinate various marketing activities to create a consistent and coherent message directed towards targeted consumers. A simpler interpretation of marketing communication is provided by Kotler (2014, p. 478) as activities through which "companies inform, persuade, and remind consumers, directly or indirectly, about the products or brands they sell", emphasizing that these promotional activities include advertising, personal selling, sales promotion, direct marketing, events and experiences, public relations and publicity, interactive marketing, and word-of-mouth marketing (*word-of-mouth*). Kitchen and Schulz (2016) also list advertising as one of the main forms of integrated marketing communication, alongside social media, sponsorships, events, direct marketing, public relations, personal selling, and other forms. Ultimately, advertising can be defined as "any paid form of non-personal presentation and promotion of ideas, goods, or services by an identified sponsor" (Kotler, Armstrong, 2010, p. 96). Therefore, advertising is more closely defined by several basic characteristics (Kesić, 2003):

- Paid form of marketing communication aimed at presenting a product to a wider audience to achieve communication and/or economic effects;
- Non-personal communication that takes place through mass media and is intended for a large number of unknown recipients;
- Known sender of the message, who can be identified or explicitly stated within the advertising campaign itself.

In today's consumer society, advertising plays a crucial role as a form of marketing communication because consumers often learn about new products through mass media and subsequently react to perceived advertisements.

The AIDA concept (Attention–Interest–Desire–Action) is frequently used to understand consumer psychological behaviour, the effects of advertising, and consumer behaviour resulting from media advertisements (Song, Ruan, Jeon, 2021). This model combines four different components: *attention*, where the buyer becomes aware of the product, *interest* that the buyer develops in the product, *desire* that arises for the product, and *action*, or the purchase of the product (Rowley, 1998). In addition to informing and encouraging consumers to purchase products they need and/or desire, advertising also has other functions to directly or indirectly influence individuals and communities (Antolović, Haramija, 2015). These functions include influencing the change of established consumer habits and the redistribution of consumption, as well as influencing the reduction of prices and costs through increased production. Moreover, advertising aids companies in directing production and innovating new products. Therefore, in fulfilling its functions, advertising seeks to satisfy both business interests on one hand and societal demands on the other. Furthermore, it is necessary to consider fundamental criticisms of advertising, which, according to Kesić (2003), are directed towards aspects such as falsehoods, deceiving consumers, encouraging materialism and bad taste, objectifying the female body as a communication tool, exploiting children, and influencing consumers to buy unnecessary products. According to the same author, such false promises, incomplete product descriptions, false claims, small print warnings, or deceptive comparisons represent dishonest practices and raise ethical questions regarding such advertising activities.

2.3. Ethics in advertising

According to the previous elaboration, ethics is the science that seeks to explain the moral aspect of human behaviour, and Antolović and Haramija (2015) explain ethics in advertising, which relates to the behaviour of companies in their market approach, especially in the implementation of communication activities identified as advertising. The messages that advertisers convey to consumers through advertisements raise numerous questions about the ethics of those ads as they often cross the boundary of what is generally acceptable in their efforts to differentiate themselves from the competition. Doubts about what is ethical (good) and what is unethical stem from contradictions in business practices because the interests of individuals, companies, and society are not aligned (Martinović, Jurković Majić, 2009). Inquiries into the ethics of advertising “most commonly relate to exaggerated claims and concealing facts, misuse of intellectual property, and the use of sexual and child-related motifs” (Antolović, Haramija, 2015, p. 119). Many companies utilize shock advertising through negative appeals in their advertisements (Martinović, Jurković Majić, 2009). For instance, the Italian fashion brand Diesel also employed shock advertising in promoting its products (Machova, Huszárik, Toth, 2015), associating them with themes related to teenage violence and prostitution (Spalletta, Ugolini, 2016). Indeed, every form of advertising through any media should be structured according to specific market rules or laws. In the Republic of Croatia, a total of 105 laws regulate advertising, market communication, and marketing³, and the ethical aspect is regulated by the Code of Ethics in Business, which prescribes signatories with “the obligation to act in accordance with the principles of responsibility, truthfulness, effectiveness, transparency, quality, acting in good faith, and respecting good business practices towards business partners, business and social environment, and their own employees”⁴. However, the ethicality specifically in the field of advertising is further regulated by the Advertising Code of Practice, which “represents the minimum standards of ethics to be adhered to in advertising practice and other forms of communication with unique criteria for the work of all individuals

³ The Croatian Association of Communications Agencies (HURA). Retrieved April 4, 2024, from <https://hura.hr/wp-content/uploads/2019/01/popis-zakona-koji-ureduju-oglasavanje-trzisno-komuniciranje-i-marketing-1.pdf>

⁴ The Croatian Chamber of Economy (HGK). Retrieved April 4, 2024, from <https://www.hgk.hr/hrvatska-gospodarska-komora/kodeks-etike>

and legal entities involved in the communication process in the territory of the Republic of Croatia”⁵. The mentioned code particularly emphasizes the paramount importance of ethics in advertising targeting children and young people, as well as the prohibition of copying signs, images, sounds, labels, or using others' creations in shaping a particular advertisement, which can confuse consumers and lead them to buy lower-quality products. Furthermore, according to the provisions of the same code, every advertising message must be clear, understandable, and correctly labelled to distinguish it from news, commentary, and similar content. Despite the transparently defined provisions of the code, companies on the Croatian market sometimes employ morally questionable methods and techniques in their advertising, such as deceptive and/or covert advertising, manipulative public relations, false representation, incomplete consumer information, plagiarism, deceptive packaging, and the like (Antolović, Haramija, 2015).

3. EMPHIRICAL RESEARCH

As previously mentioned, the main problem of the research is the insufficient exploration of consumer perception of ethics in advertising in the Croatian media. Accordingly, the research objectives and hypotheses have been defined, as stated above in the text, before conducting the adequate qualitative and quantitative research. Both types of research were valuable in providing a comprehensive understanding of the studied topic.

3.1. Methodology

The detailed plan was developed for both qualitative and quantitative research, including definition of research approaches, methods and samples, as well as creating the research instruments, in accordance with the objectives of the research. The first approach was an in-depth interview which also served as a basis for designing a survey questionnaire. The interviews were conducted with five Croatian experts in marketing communication. The respondents were the employees of Croatian reputable advertisers and advertising agencies, with many years of respectable experience in the field. The data were collected online via video calls individually with each interviewee. The second of two approaches used in this research was a survey-based research. The survey was conducted online utilizing a Google Form questionnaire to facilitate the process, between March and May in 2024 on the non-probability sample of 310 adult respondents. The research sample was convenient, and the sampling relied on snowball technique, meaning that existing study participants recruited future participants from among their acquaintances. The questionnaire was divided into four main sections. Firstly, the elimination question about the age was asked to ensure the relevance of the research sample. The second part encompassed the demographic data related to gender, age group, educational level and employment status of respondents. The third section focused on the participants' familiarity with the concept of ethics, and the last section referred to the respondents' perception and attitudes towards advertising and, more precisely, ethics in advertising. Table 1 presents the demographic characteristics of the research sample which encompassed 310 participants in total.

Table following on the next page

⁵ The Croatian Chamber of Economy (HGK). Retrieved April 4, 2024, from <https://www.hgk.hr/documents/kodekspravilaoglasavanja57b021280c843.pdf>

Table 1. Demographic characteristics of the respondents

Variables	Categories	Frequency	Percentage (%)
Gender	female	176	56,8
	male	134	43,2
	prefer not to disclose	0	0,0
<i>Total</i>		310	100,0
Age	18-24	57	18,4
	25-34	59	19,0
	35-49	96	31,0
	50-65	92	29,7
	over 65	6	1,9
<i>Total</i>		310	100,0
Educational level	secondary	97	31,3
	bachelor	54	17,4
	4 year graduate	62	20,0
	5 year graduate	53	17,1
	M.Sc./PhD	41	13,2
	other	3	1,0
<i>Total</i>		310	100,0
Employment status	student	65	21,0
	employed	227	73,2
	non employed	8	2,5
	retired	8	2,5
	other	2	0,8
<i>Total</i>		310	100,0

Source: Author's research

As shown in Table 1, most respondents are female of age between 35 and 65 years. As for their employment status, the majority of participants are currently employed and the rest of them are students in principle. One third of the respondents finished secondary school, while most respondents are higher school graduates, all graduation levels considered jointly.

3.2. In-depth interview results

All interviews conducted with the experts started with a set of introductory questions about their job positions, professional experience and knowledge about the research issue. The main part of the interview guide covered questions referring to a concept of ethics in advertising, especially in Croatia, such as respondents' perception on ethics in advertising (in general and in case of Croatian advertising), as well as their opinion on application of ethical principles and values in Croatian advertising currently and in the future. In general, all the interviewees state that ethics is extremely important in all forms of marketing communications, but particularly in advertising as fair and responsible advertising contributes to making the entire consumer society more responsible. That applies to Croatian society as well. However, the respondents are not satisfied with the ethical aspect of Croatian advertising pointing out that previous studies have shown that Croatian advertising is generally perceived as manipulative and unfair practice within the industry. Basically, the respondents believe that the core values of advertising are not sufficiently represented in today's advertising in Croatia media. Moreover, some interviewees emphasize a few significant weaknesses of advertising, such issues include promoting materialism, objectifying women and the female body as a communication tool, exploiting children, imposing beauty ideals, and misleading consumers. Regarding the advertising ethics in Croatia, respondents hold divided opinions, but they all agree on the following: it is concerning that on average, about ten complaints are made annually about specific content in advertising messages, and every fourth or fifth promotional message is unethical or illegal, so could be subject to sanctions.

Ultimately, all respondents hope that advertising ethics in Croatian media become more important in the future as the common objective is to maintain consumers' trust and confidence in advertising.

3.3. Survey results

First and foremost, it is important to highlight the survey finding that generally all respondents, around 95% of them, are fully or to a greater extent familiar with the concept of ethics, which was a facilitating factor in completing the survey as there is a higher likelihood that the respondents understood the questions posed in the questionnaire and consequently provided more accurate and precise answers. Namely, the concept of ethics immediately associates almost all respondents with morality, 281 of them, followed by honesty and the relationship between good and evil for about half of the respondents. A slightly smaller, but still significant portion of respondents mentioned associations with justice and sincerity. Through these associations, the respondents confirmed their general familiarity with the meaning of the concept of ethics. However, in the next question, respondents were presented with a brief definition of ethics to eliminate the possibility of any incorrect and/or incomplete interpretation of the concept that was the focus of all survey questions. The responses to the question regarding the importance of ethics in individuals' lives indicate that ethics is extremely or to a greater extent important for 90.9% of them, partially confirming hypothesis H2. This was followed by questions about advertising and the ethical aspects of advertising in a new section of the questionnaire. So, almost half of the respondents, 47.7% of them, consider ethics in advertising to be extremely important, and a slightly smaller percentage of respondents, 41.9%, consider it to be to a greater extent important, which generally fully confirms the initial hypothesis H4 about the importance of ethics in advertising for Croatian consumers. In addition, the same responses, observed together with the responses from the previous question, also confirmed hypothesis H2 about the importance of ethics for Croatian consumers, whether in life or in a business context. Speaking about the initial reaction of respondents to the term "advertisement" (commercial), half of the respondents (52.9%) have a neutral opinion. However, what might be more concerning is the fact that more consumers react negatively than positively to the mention of advertisements, with 24% having a negative opinion compared to 19% with a positive opinion. Nevertheless, it is encouraging to find that the proportions do not differ significantly. Subsequently, respondents were presented with the definition of the term "advertisement" to enable them to respond to further questions with greater certainty and precision. Since a vast majority, 75.8% of them, notice advertisements daily, and 15.8% of respondents often notice ads in their everyday lives in Croatia, it can be concluded that almost all Croatian consumers, more than 91%, frequently notice ads in Croatian media, primarily on websites, social media, and television (over 220 respondents), followed by billboards and radio spots. Therefore, this finding confirms the partial hypothesis H1A that Croatian consumers notice advertisements in the media. The next question aimed to confirm partial hypothesis H1B that Croatian consumers believe that advertisements significantly influence their buying behaviour. However, the majority of respondents, 53.9%, believe that ads only slightly influence their purchases, and 37.4% of respondents share the belief that ads absolutely or to a greater extent influence their consumer behaviour. This rejected hypothesis H1B and ultimately only partially confirmed hypothesis H1 regarding the importance of advertisements for Croatian consumers. In other words, Croatian consumers notice ads in their everyday lives in Croatia, but they are convinced that these perceived ads only have a slight influence on their purchasing decisions. The next question asked respondents to assess their level of agreement with four statements related to their perception of advertisements and ethics in advertising, as shown in Table 2.

Table 2. Croatian consumers' perception of advertisements and ethics in advertising

Statements	1 strongly disagree (%)	2 mostly disagree (%)	3 neither agree nor disagree (%)	4 mostly agree (%)	5 strongly agree (%)	Mean	Std deviation
I only notice advertisements that promote products that interest me, regardless of their ethics.	15,5	25,5	26,1	24,2	8,7	2.85	1.21
I notice advertisements whose ethics are questionable to me, regardless of the products they promote.	10,0	14,8	30,0	28,1	17,1	3.27	1.21
I am always aware of the ethical aspect of advertising.	3,8	15,8	31,0	34,2	15,2	3.41	1.06
Advertisements simply entertain me, regardless of their ethics.	28,1	29,0	29,4	8,7	4,8	2.33	1.13

Source: Author's research

According to the data obtained, respondents hold divided opinions regarding the advertisements they notice, regardless of the ethics of those advertisements, but about half of the respondents, 45.2%, notice ads with questionable ethics. It is also noticeable that about half of the respondents (49.4%) agree that they are always aware of the ethics in advertising, thus confirming the initial hypothesis H3 that consumers in Croatia are generally aware of advertising ethics. Also, as noticeable from Table 2, the majority of respondents disagree with the statement that advertisements only entertain them, as indicated by the low arithmetic mean of 2.33. However, it is necessary to note that a similar percentage of respondents, around 30% of them, remained neutral towards all four statements in question. Furthermore, when it comes to advertising objectives, the majority of respondents recognize "informing consumers about the product" and "persuading consumers to purchase the product" as key objectives. However, it is essential to note that half of the respondents identify "manipulating consumers" as an objective, which raises questions about the ethics of advertisements in Croatian media. Similarly, most respondents confirm their awareness of advertising ethics by defining an ethical advertisement as one that does not provide false information about the promoted product, does not offend anyone, and respects diversity. Additionally, if they notice an unethical advertisement, over 60% of consumers ignore it and do not purchase the product promoted in such an advertisement. Also, when it comes to the use of specific content in advertisements, respondents express consistent views on certain content such as exaggerated product qualities, children, scenes of eroticism and sex, and especially scenes of violence. Therefore, about 60% of respondents either do not support or do not significantly support the exaggeration of product qualities or quality in advertising, the depiction of children (minors) in advertisements, scenes of eroticism and sex, while over 80% of respondents either do not support or do not significantly support the use of scenes of violence in advertisements. The use of the female or male body in advertisements is the only content around which respondents generally have divided opinions, with one-third of respondents supporting such content, one-third not supporting it, and one-third taking a neutral stance.

The assumption that can be inferred from this finding is the respondents' lack of understanding of the context in which the female or male body is used in advertising, which is not specifically defined in the question as a particular situation, since the mentioned content is observed in general. Therefore, the divided views of survey participants can generally be understood. Similar uniformity in respondents' answers is found in the last closed-ended question of the survey about specific elements that bother consumers in advertising. As noticed in Table 3, respondents mostly emphasize the extent to which they are bothered by inaccurate product descriptions and false promises in advertisements, as well as advertising false sales or violating consumer privacy. Similarly, they are significantly bothered by unwanted internet ads and fine print warnings or expiration dates of advertised products. Additionally, they are also bothered by unwanted flyers in the mailbox, but not to the extent of the other mentioned elements in advertising.

Table 3. Specific elements that bother Croatian consumers in advertising

Elements	1 does not bother at all (%)	2 does not bother (%)	3 neutral opinion (%)	4 mostly bothers (%)	5 absolutely bothers (%)	Mean	Std deviation
false sale	1,0	10,2	30,0	2,3	56,5	4.39	0.84
unwanted online ad	0,6	2,3	13,9	30,0	53,2	4.33	0.85
unwanted flyer in the mailbox	1,6	7,4	36,8	30,6	23,5	4.45	0.77
inaccurate product description	0,3	1,6	10,0	29,0	59,0	4.58	0.76
false promise	0,6	1,3	8,4	18,7	71,0	4.10	0.99
fine print warnings or expiration dates	1,6	6,5	14,8	34,8	42,3	4.46	0.86
violation of privacy	1,3	1,9	10,0	22,9	63,9	4.39	0.84

Source: Author's research

The data on the mean values from Table 3 clearly show that respondents share the same opinion regarding all content elements that generally bother them or greatly bother them in advertising, with mean values ranging from 4.10 to 4.58. Additionally, the average deviations of all responses from the arithmetic mean are small, with standard deviations ranging from 0.76 to 0.99, indicating similar cohesive responses and unanimity among respondents. The last question in the questionnaire was open-ended to allow respondents to openly and honestly add comments and share personal thoughts on the researched topic. Among the more significant and useful comments, one opinion stands out that the problem of ethics in advertising stems from a larger issue of ethics in Croatian society, which is followed by a comment on the role of ethical advertising in promoting social responsibility, which is extremely important in today's world. Similarly, one respondent recommended considering the ethics of advertising channels in addition to the content of the ads because digital advertising platforms are becoming increasingly aggressive in imposing ads on consumers. Exactly, the comments and recommendations of the respondents confirm their concern as consumers, not only about the ethics of individual advertisements but also about the importance of socially responsible business practices, as well as ethics in Croatian society in general.

4. DISCUSSION AND RESEARCH LIMITATIONS

The research findings of this paper support given and other previously mentioned studies providing with more recent and specific information on ethics in Croatian advertising from the perspective of both marketing experts and consumers.

Based on the results of the conducted interviews and surveys, a uniform stance among all respondents regarding the importance of ethics in advertising is observed, which they directly associate with the social responsibility of advertisers and society in general. Namely, marketing experts express concern about the existence of legal regulations that do not ensure adequate suppression of the use of unethical elements in advertising on the Croatian market, of which the majority of consumers are aware because they often notice advertisements of questionable ethics and react negatively to them. Similarly, it is concerning that consumers, besides being informed about the product and persuaded to purchase it, identify manipulation of consumers as one of the main goals of advertising in Croatia. However, it should be noted that, according to the research results, consumers believe that advertisements have only a slight influence on their purchasing decisions. In this sense, it seems encouraging that there is sufficient awareness and prudence among consumers in Croatian society, which is still, according to many, rather inert and irresponsible when it comes to taking measures to combat unethical practices of Croatian advertisers. As Šego (2010) emphasizes, instead of unethical advertising messages, cooperation between advertisers and consumers should come to the fore in the world of the future. Furthermore, it is important to note that this analysis could not fully evaluate advertising ethics due to the certain limitations of the research. Specifically, the sample size is not insignificant, but also not large enough for trustful generalisation. Therefore, expanding the sample size could eventually lead to more reliable results from the research. The research, however, has yielded instructive results that are certainly worth further studying. Also, future research can be expanded to other markets to enable comparing the perception of Croatian advertising to that of foreign business practices in the field. Finally, more extended study combining this approach with similar empirical models might provide a deeper insight for future researchers.

5. CONCLUSION

Taking into account the presented research results, the following conclusion remarks related to the research hypotheses could be formulated:

- 1) Croatian consumers generally consider ethics important in their lives, but also in advertising practices;
- 2) Croatian consumers notice advertisements on a daily basis, but generally believe that advertisements only have a slight influence on their purchases;
- 3) Croatian consumers are aware of ethics in advertising. The frequent lack of ethics in advertisements negatively affects their purchasing decisions, as well as their trust and confidence in advertising.

To conclude with, the hypotheses H2, H3 and H4 are completely confirmed, and the hypothesis H1 is partially confirmed due to the rejection of its partial hypothesis H1B, as elaborated in more details previously in the paper. Eventually, it seems crucial to set the common goal for all Croatian stakeholders in advertising industry, that is, to achieve a balance between the interests of consumers, advertisers, and the Croatian society as a whole. That certainly implies efforts by marketing professionals who will strive for more ethical solutions in their everyday considerations and actions in advertising practice to improve the perception of advertising ethics in the eyes of Croatian consumers.

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ECONOMIC AND SOCIAL ASPECTS OF UNACCOMPANIED CHILDREN MIGRATION IN EUROPE

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ABSTRACT

During the refugee crisis of 2015/2016, a significant influx of unaccompanied children began entering Europe, a trend that has continued to the present day. Due to war, human rights violations, poverty, natural disasters, and lack of education, many children, particularly from the Middle East and Africa, have either independently or at the behest of their families, embarked on a journey towards a better life, joining the flow of refugees seeking to reach wealthier European countries. These children, nationals of third countries or stateless, are outside their country of origin and separated from both parents or legal guardians. The separation from parents or guardians increases the risk of these children falling victim to human traffickers, who force them into pickpocketing, begging, or working as unpaid domestic servants and laborers. They are coerced into participating in drug trafficking, prostitution, and pornography, and often fall prey to false adoptions and organ trafficking. The negative long-term economic and social aspects include the perpetuation of social inequality and poverty cycles, as these children are deprived of educational opportunities and the prospect of better-paid jobs in the future. The exploitation of unaccompanied children can also stimulate further migration, leading to complex demographic consequences, including pressure on public services and infrastructure. However, integrating and appropriately educating unaccompanied children can yield positive long-term economic and social outcomes, as these children become productive members of society, contributing to the economy through the workforce and tax payments, and to society by raising the standard of living. Notably, in contrast to many other situations where collaboration may be lacking, the case of unaccompanied children sees strong empathy and joint efforts from both media and public relations services of state institutions to assist this vulnerable group.

Keywords: *ethical conflicts, media reporting, migration, unaccompanied children, socio-economic aspects*

1. INTRODUCTION

Approximately one-third of the world's population are children, numbering over two billion globally. Unrest, conflicts, wars, and poor governance are among the primary causes of declining quality of life for every twelfth child worldwide. The likelihood that around 180 million children from 37 countries live in extreme poverty, do not attend school, or die from violent causes is higher today than it was 20 years ago, according to data published by UNICEF in November 2017 (Hina, 2017). According to some authors, there are three categories of unaccompanied children: children who migrate in search of better opportunities and are in an irregular status, children who become victims of human trafficking during migration, and children who flee dangerous circumstances and seek asylum in the destination country (Kraljević, Marinović, Živković Žigante, 2011: 6). The specific situation of children separated from their parents outside their country of origin can be characterized by a high likelihood of these children having been exposed to traumatic migratory experiences, a direct consequence

of the absence of parental or legal guardian care and protection (Çelikaksoy, Wadensjö, 2016: 38; Selak Živković, 2008: 8). Since the Middle East, as a region of global conflict involving major powers through proxy forces, continues to be an area of turmoil, crises, and wars, which intentionally generate migratory movements towards European territory (Takahashi, 2017: 8), it is essential to continually highlight the issue of unaccompanied children. This refers to third-country national children or stateless children under the age of 18 who are outside their country of origin and separated from both parents or legal guardians, thus being at risk of exploitation, violence, and human trafficking. Contributing to this are increasingly restrictive border control policies and often inadequate responses from social welfare systems in the countries where unaccompanied children are found (N1 Hrvatska, 2017). The second chapter highlights the problems and dangers faced by children traveling alone during their illegal movements towards their desired destinations – wealthy European countries. The third chapter describes how this phenomenon is addressed in the Republic of Croatia, while the fourth chapter outlines the positive and negative economic and social aspects of unaccompanied child migration, emphasizing EASO guidelines. The fifth chapter explains public attitudes towards the migration of unaccompanied children, and the concluding considerations summarize the most important data and opinions presented in the paper, stressing the need for a new and pragmatic approach to this issue.

2. SAFETY ISSUES OF UNACCOMPANIED MIGRANT CHILDREN

The migration crisis has never been as prominent as it has been in recent years due to the large influx of migrants and refugees from the Middle East, Africa, and Ukraine, whose ultimate destination is the European Union. The external borders of the European Union remain under increased pressure, with the number of migrant arrivals continuously rising. According to preliminary data collected by Frontex, 330,000 illegal crossings of the EU border were recorded in 2022, representing a 64% increase compared to the previous year. It is important to note that these figures do not include displaced persons from Ukraine, who are recorded separately (EUAA, 2023: 10). Today, we are facing unprecedented levels of population displacement, refugee and migratory pressures, and movements globally (Duhaček, 2017). In 2015/2016 alone, approximately 300,000 unaccompanied children separated from their families were registered worldwide, which, according to UNICEF data, is a fivefold increase compared to 2010. Of these 300,000 children, approximately 100,000 were found crossing the border between Mexico and the United States. Around 200,000 children applied for asylum in roughly 80 countries during 2015/2016, with 170,000 of these applications submitted in Europe (Al Jazeera Balkans, 2017). The European Union has a legal and moral obligation, as well as a historical responsibility, to provide protection to those in need (European Commission, 2016; European Commission, 2017a). According to migration statistics in Europe published by the European Commission, 237,600 asylum seekers under the age of 18 were recorded in 2022, with approximately one in six (39,500) falling into the category of unaccompanied children. The majority of unaccompanied children were from Afghanistan, Syria, and Somalia (European Commission, 2023). In the first seven months of 2023, 601,600 asylum applications were submitted in the EU (556,200 of which were first-time applications). This represents a 25% increase compared to the same period in 2022 and a 52% increase compared to the pre-COVID-19 pandemic period (the same period in 2019) (European Commission, 2023). The safety issue concerning unaccompanied children has garnered significant attention primarily due to media reports. The media have highlighted the "disappearance" of a large number of unaccompanied children after their registration in the state offices of various countries. Reports indicated that over 8,000 unaccompanied children went missing in Germany, about 5,000 in Italy, 1,000 in Sweden, 187 in Croatia, and so on (Hina, 2016; Županić, 2016; Turčin, 2017).

These media reports on the disappearances "shook" the social welfare systems in countries along the migrant routes, which had not previously been particularly diligent in identifying and adequately supporting this highly vulnerable group (Hina, 2016; Županić, 2016; Turčin, 2017). The safety risks for unaccompanied children significantly increased following the implementation of the agreement between the European Union and Turkey to retain migrants within Turkish borders, which led to the closure of the Balkan (Eastern Mediterranean) route, leaving many unaccompanied children outside the Union's borders. Minors wishing to reach wealthy European countries are now forced into desperate measures. They rely on human traffickers or smugglers who offer to continue their journey under their arrangement and terms, resulting in some children becoming victims of exploitation and abuse. These children are coerced into working to earn money for their continued journey, forced into prostitution, slave labor, or even exploited for their organs in illegal markets (Županić, 2016). The data on the number of unaccompanied children and the number of missing unaccompanied children are, of course, not precise. However, it is known that more than a million children are sold worldwide annually (Kulaš, 2005). After the closure of the Balkan (Eastern Mediterranean) route, there was an increase in migrant arrivals on European soil via the Central Mediterranean and other routes. Approximately 92% of children and young people who traveled by boat from North Africa to the Italian coast from early 2016 to the end of February 2017 were unaccompanied. In 2015, the proportion was lower, around 75% (Al Jazeera Balkans, 2017). Families are often forcibly separated when boarding vessels, which is another reason why children arrive in Italy without their parents (Bauer, 2016: 9). Human traffickers ruthlessly exploit the chaos in Libya, charging exorbitant fees for each journey to Europe. They disregard the safety of migrants, sending them in unsafe and overcrowded boats towards European territories, including Italy, Greece, Malta, and Spain. In its 2016 report on the situation in the Mediterranean and the need for a comprehensive European Union approach to migration, the European Parliament warned that 77 children died crossing the Mediterranean in the first nine weeks of 2016, averaging more than one child per day (European Parliament, 2016: 10). In the same report, under the section concerning Children, the European Parliament emphasizes that children arriving in the Union are in a vulnerable position and that every child has the right to be treated primarily as a child. Therefore, it calls upon Member States to fully implement the specific provisions of the common European asylum system regarding unaccompanied minors, including access to legal aid, guardianship, healthcare, accommodation, and education, the right to be heard in a language they understand, and the provision of trained officials to conduct interviews with them. It is repeatedly stressed that Member States must not detain children solely because they are migrants. The European Parliament also reminds that support, information, and protection must be provided to all unaccompanied children and children separated from their parents, in accordance with their best interests, and that their family reunification requests should be expedited as much as possible. Furthermore, it underscores that an effective guardianship system and child protection system are crucial to prevent abuse, neglect, and exploitation of children without parental care, thus emphasizing the importance of establishing EU guidelines for guardianship systems aimed at providing support and protection, ensuring equal treatment of children from third countries and children from EU Member States (European Parliament, 2016: 20). This report highlights that migrants and refugees, particularly unaccompanied children among them, are highly vulnerable and therefore at risk of becoming victims of criminal groups. It stresses the need to provide special care for refugee and migrant women and children who are victims of human trafficking, and to provide them with medical and psychological assistance, and children with the necessary protection.

The EU and Member States are called upon to integrate a child and gender perspective into their policies on immigration, integration, and asylum, and to insist that Union's approach to migration and border management respects the rights of vulnerable individuals and the fundamental principle of the best interests of the child (European Parliament, 2016: 34).

3. UNACCOMPANIED MIGRANT CHILDREN IN CROATIA

Although not as attractive as a destination for refugees, Croatia is not exempt from the dynamics and realities of illegal migration from other countries and continents, including unaccompanied migrant children, who constitute 10 percent of the total number of foreigners in illegal status in Croatia (Kraljević, Marinović, Živković Žigante, 2011: 6). Contributing to this is the lower standard of living compared to Western Europe. During the migration crisis, migrants, after entering Croatia and brief stays in reception centers, sought to pass through its territory as quickly as possible to reach their desired destination, and similarly, Croatia aimed for migrants to pass through quickly to avoid becoming a hotspot or a gathering center (Takahashi, 2017: 69). In 2023, 61,000 illegal migrants entered Croatia, while the Ministry of the Interior does not disclose data on the number of persons under temporary protection, their accommodation, or integration programs (Borić, 2024). From mid-September 2015, when the first wave of refugees passed through Croatia, until the end of 2016, 217 unaccompanied foreign children were found in Croatia. These were boys aged 13 to 18 who embarked on their journeys alone, mostly towards Western European countries. Croatia was not their desired destination. Most of these children were caught illegally crossing the border, often in groups facilitated by human traffickers after the closure of borders and the end of the Balkan route. The system was not adequately prepared for such a large number of unaccompanied children (Turčin, 2017). Regina Castillo, the head of the UNICEF Office in Croatia, stated that "all children have all rights, regardless of nationality, origin, or status" and that in collaboration with the Swiss Government, they have signed a new agreement that "will strengthen support for all refugee and migrant children coming to Croatia" (UNICEF, 2024). However, this support is currently highlighted mainly for refugee children from Ukraine. During 2023, more than 500 of the most vulnerable children and 115 caregivers displaced from Ukraine benefited from specialized psychosocial support services. This included individual counseling, group workshops in Ukrainian language, and basic family support and child protection services, including essential supplies. Additionally, over 1,900 professionals and social service providers were trained on important topics such as trauma, foster care for unaccompanied children, or supporting mental health in crisis situations. In this way, access to psychosocial support services was ensured for over 7,700 children and 17,000 caregivers of children displaced from Ukraine (UNICEF, 2024).

4. THE ECONOMIC AND SOCIAL ASPECTS ON UNACCOMPANIED MIGRANT CHILDREN

Due to harsh living conditions, war, human rights violations, violence, poverty, natural disasters, lack of education, many children - victims of catastrophic and unprecedented destruction and violence in the Middle East and Africa - decide on their own or at the urging of their families to seek a better life and join the stream of refugees attempting to reach safer places to live. Parents send them "into the world" to save their lives, unsure if they will ever see them again. Children do not know if they will ever return and reunite with their families. They are alone wherever they go, and they will never be as important to anyone as they are to their parents (Stojanović, 2016). On this journey towards an expected better and safer life, many children become victims of human trafficking, sexual violence, and other physical and psychological abuses. The need for money makes them very vulnerable to gangs operating along refugee routes, in refugee camps, and in the countries they travel to.

Although refugee and reception centers may appear temporary and safe, they are fertile ground for organized criminal groups. There is significant overlap between those involved in refugee smuggling and gangs that exploit these refugees as sexual slaves and illegal labor. Criminal groups involve them in illegal and dangerous activities such as drug smuggling, money laundering, or further human trafficking. Traffickers providing smuggling services for migrants across Europe charge several thousand euros, rendering their services unaffordable to most children, even those engaged in prostitution. A number of sexually exploited girls and boys are dependent on various drugs, further complicating their ability to gather the necessary funds for their journeys. A report from the public health team at the Harvard Center for Health and Human Rights revealed a growing epidemic of sexual exploitation and abuse of migrant children in Greece. Many children originating from Syria, Afghanistan, and Pakistan currently residing in Greece turn to prostitution because they are unable to pay smugglers for their services, hoping to break out of a dead end (Civilnodrustvo.hr, 2017b; Freccero et al., 2017). Even 20 percent of traffickers are linked to human trafficking networks (UNICEF, 2017). Social welfare systems in countries along refugee routes fail to identify all these children, including those as young as nine years old, who traverse thousands of kilometers without parents or guardians. Such children are often "invisible," and even when identified by social welfare systems, they are sometimes placed in inappropriate conditions, which in some countries include detention-like facilities, such as in Bulgaria and Hungary (Civilnodrustvo.hr, 2017a). Many of these children intentionally seek to remain "invisible" out of fear of deportation, making their detection even more challenging (Bratonja Martinović, 2016). Unaccompanied children found within the EU ultimately present themselves as asylum seekers or illegal migrants in European immigration countries. Every third asylum seeker in Europe is a child (Law Clinic of the Faculty of Law in Zagreb, 2014; European Commission, 2017b). Illegal child labor among unaccompanied migrant children has significant negative impacts on Europe's economy, including labor exploitation, disruption of education, and increased social and health costs. While it may provide short-term economic benefits by enhancing labor market flexibility and reducing production costs, the long-term consequences are predominantly negative, perpetuating cycles of poverty and inequality and creating complex demographic challenges. Therefore, unaccompanied children constitute a particularly vulnerable group within the European refugee crisis, prompting the European Asylum Support Office (EASO) to issue Guidelines on the Reception Conditions for Unaccompanied Children: Operational Standards and Indicators. Providing appropriate care and integration for unaccompanied children through these guidelines has significant economic and social implications. Short-term costs may be substantial, but in the long run, proper integration can yield economic benefits and social cohesion. The guidelines also ensure that EU member states adhere to their moral and humanitarian obligations, which are crucial for maintaining high standards of human rights (EASO, 2018). When discussing the economic aspect, initially there are increased costs associated with providing care, education, and healthcare to children, which can create short-term economic challenges for host countries. Specifically, the EASO guidelines (2018) emphasize the need to ensure appropriate care for unaccompanied children, which involves investments in reception facilities, education, and healthcare. However, the potential for economic contribution from the host country with successful integration is certainly much greater. When unaccompanied children become part of the community and have access to education and resources, they can become productive members of society contributing to the economy through labor force participation and tax payment. From a social perspective, integration and social cohesion are paramount, as well as the protection and safety of unaccompanied migrant children. The EASO guidelines (2018) assist in establishing standardized procedures that ensure unaccompanied children receive the necessary support and resources for integration into society, promoting their well-being and social inclusion.

It underscores the importance of protecting unaccompanied children from risks such as exploitation, abuse, and trafficking, thereby ensuring their safety and contributing to community stability.

5. PUBLIC PERCEPTION OF UNACCOMPANIED MIGRANT CHILDREN

The ethics of public relations, alongside journalistic and business ethics, constitutes a field within practical ethics concerned with the conduct of PR practitioners and the frameworks underpinning their actions (Milas, 2012: 59). Public relations should embody ethically impeccable behavior and actions, independent of individual interests, without any manipulative approach, and should primarily be characterized by objectivity. In reality, the safety-humanitarian framework determines that policies towards migrants vary between two extremes, compassion and repression, with an increasing suspension of guaranteed rights. Migration and refugee arrivals at the borders of sovereign states are perceived as threats, and institutional and non-institutional reactions to these threats fall within the framework of a politics of fear (Petrović, 2017: 383). Amid different interpretations of how to treat migrants crossing state borders illegally, there is a group among these migrants that reconciles and unites opposing sides, integrating journalistic ethics and public relations ethics into a unified ethics characterized by transparency, truthfulness, and objectivity. This group consists of unaccompanied children. Numerous media outlets, particularly the respected British Guardian and German Deutsche Welle, among others, have highlighted these circumstances and events, prompting organizations such as Save the Children and the International Rescue Committee to advocate more strongly for neglected unaccompanied children exposed to immense stress and danger, despite the "Separated Children in Europe Programme," a joint project initiative by UNHCR and Alliance Save the Children Organizations existing since 1997.

6. CONCLUDING REMARKS

The phenomenon of unaccompanied children represents a significant international issue that has become increasingly pronounced over the past decade. Specifically, the number of unaccompanied children attempting to enter the European continent, particularly the European Union, has seen a notable rise. During 2015 and 2016, approximately 30% of all asylum seekers in the EU were children, a figure that continues to grow steadily. Migrant children are particularly vulnerable due to their age, distance from home, and separation from parents or guardians. Human traffickers rent or purchase children, who, once on the streets of Western European cities, are forced to earn up to 2000 euros daily. The most adept pickpockets are further resold for several thousand euros, generating enormous profits for traffickers. Experts from the International Labour Organization (ILO) and UNICEF estimate that children comprise 40 to 50% of all victims of forced labor. They also believe that two-thirds of children in the worst forms of forced labor are between the ages of 5 and 14. No one can accurately determine the exact number of unaccompanied minors in Europe who are reported missing, nor their specific whereabouts. These figures fluctuate daily, and there are doubts about the methods used for their collection. Child protection and refugee organizations report alarming statistics, although they too lack definitive data. UNICEF's report "A Child is a Child: Protecting Children on the Move from Violence, Abuse, and Exploitation" provides a global overview of the situation of refugee and migrant children, their motivations for travel, and the risks they face along the way. The report identifies a growing number of children undertaking extremely perilous journeys to their destinations, exposed to the mercy of smugglers and human traffickers. This underscores the urgent need for a global protection system to shield children from exploitation, abuse, and death.

No child should travel unaccompanied, yet an alarmingly large number do so today. Ruthless smugglers and traffickers exploit their vulnerability for personal gain, facilitating their border crossings only to later sell them into slavery or coerce them into prostitution. It is unacceptable that children are not adequately protected from these predators (UNICEF, 2017; Filippov et al., 2017: 5213). Indeed, the fact remains that an increasing number of countries are disregarding the 1951 Refugee Convention and other global humanitarian agreements intended to protect the world's most vulnerable groups. Even the initially friendly and open attitude of Europeans towards migrants (both children and adults) who arrived on European soil in 2015/2016 has gradually shifted over time. The refugee crisis has reinforced latent differences among member states while also giving rise to new conflicts and straining mutual relations. Simultaneously, it has emboldened radical nationalist political factions, xenophobia, and intolerance towards immigrants and minorities in general (Maldini, Takahashi, 2017: 55). Awareness and the success of journalists in portraying various forms of human trafficking and changing trends in this criminal activity suggest the need to build media strategies aimed at increasing the number of objective contributions, stories, and investigations. Consequently, this would enhance public awareness and knowledge about this social issue and ways to prevent it. Throughout this endeavor, it is crucial to always bear in mind that children separated from their parents are first and foremost children. They are at risk of marginalization, involvement in criminal activities, and radicalization. They are entitled to all benefits and safety guaranteed by the UN Convention on the Rights of the Child. They have a strong need for care and protection, and for the country they arrive in, they represent more of a potential than a burden because given the opportunity, they will invest their youth and working lives in their new homeland. Therefore, addressing this issue requires a new and more pragmatic approach. The exact number of unaccompanied children in Europe remains unknown, as does the fate of children who do not seek asylum and disappear daily without a trace. Statistics indicate that for every documented child integrated into the European Union system, there exists one child undocumented within that system (Reslović, 2022). This raises the pressing question of what actions can be taken to change this alarming situation and assist children overwhelmed by fear and hopelessness, vulnerable and compromised in their overall integrity, burdened by responsibility, and on a mission to reach Western Europe, secure employment, and thereby support their families back home. It must be emphasized that despite good intentions, dramatic oversights were made in Europe during the initial migration crisis of 2015/2016 concerning unaccompanied minor refugees traveling alone and completely unprotected. Effective protection for these children can only be ensured by placing them under the care of a suitable youth office or reuniting them with their families. For this reason, EASO has issued guidelines (2018) aimed at supporting EU countries in providing an adequate standard of living for unaccompanied children, considering their specific needs. The political purpose of these guidelines is to serve as a tool to support reforms or development and as a framework for setting further acceptance standards. Implementing these guidelines can enhance social reputation and ethical standards within communities, as unaccompanied children are particularly at risk of exploitation, human trafficking, abuse, and other forms of violence. Regardless of economic and social aspects, host countries have a humanitarian and moral responsibility to provide protection and support to unaccompanied children in accordance with international human rights standards and conventions on the rights of the child. It is encouraging that media and public relations services of state institutions demonstrate strong empathy towards unaccompanied children and unlike many other issues, are united in their efforts to act collectively on this matter.

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A PROPOSED MODEL FOR EVALUATING THE EXPLANATORY VALUE OF BANKS' QUANTITATIVE CREDIT-RISK DISCLOSURES UNDER IFRS-9

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ABSTRACT

This paper posits a model that could be utilised to evaluate the explanatory value of banks' quantitative credit-risk disclosures, and thereby the claims by the International Accounting Standards Board (IASB) that credit-risk disclosures that comply with its latest International Financial Reporting Standard (IFRS)-9 would be decision-useful to banks' stakeholders. The study was motivated by a lack of a comprehensive methodological framework that could enable one to empirically evaluate the value and objectives of IFRS-9 credit-risk reporting. The absence of such a framework constitutes a significant methodological drawback because it means that, until such time as one is established, the IASB's claims mentioned above remain largely unsubstantiated. Consequently, the empirical decision-usefulness of banks' credit-risk disclosures also remains largely unknown, albeit presumed. The study develops a logical basis for the specification of banks' accounting-based credit-risk determinants together with industry-specific, bank-specific and other macroeconomic variables within a theoretical model that facilitates the empirical observation of reported credit-risk. It was established that when relevant industry and bank-specific factors are controlled for, IFRS-9 credit-risk disclosures can be specified within an intrinsic valuation equation to observe the explanatory value of the bank-level credit-risk assumed by bank managers. The posited model makes it possible to empirically evaluate the explanatory value of banks' credit-risk disclosures, and thereby validate the IASB's claims about the value and objectives of IFRS-9 credit-risk reporting. Thus, it is hoped that this model will prove helpful to stakeholders interested in empirical evidence of the decision-usefulness of listed banks' quantitative credit-risk disclosures.

Keywords: *Expected credit losses (ECL), non-performing loans (NPL), credit impairments, loan-loss provisions, credit-risk disclosures, decision-usefulness, explanatory value, IFRS 9*

1. INTRODUCTION

Banks are constantly susceptible to significant credit risk due to the fact that they extend credit to customers who might default on their contractual obligations, leading to financial losses (Lajili, Polizzi & Scanella, 2022; Meng, Kuang, Lv, Fan & Chen, 2022). On the other hand, stakeholders need to manage their risk positions in relation to their respective banks when making economic decisions (Scanella & Polizzi, 2021; Wheeler, 2021). The distinct separation of ownership and management control applicable within the context of listed banks, as well as the resultant divergence of interests between the bank stakeholders (as the principals) and bank directors (the agents), are often regarded as giving rise to problematic complexities when it comes to the reporting and disclosure of actual bank credit risk to the stakeholders (Smith, 2005; Fama & Jensen, 1983). In particular, the natural opacity of banks, the culture of secrecy and inadequate credit risk disclosure regarding banks' operations and risk management practices are considered to contribute to information asymmetries about the credit risk of banks (Altunbas, Pollizi, Scanella & Thornton, 2021; Sowerbutts & Zimmerman, 2016).

Such credit risk information asymmetries make it difficult for stakeholders to monitor and assess the level of risk assumed by bank managers and have often been cited as the root causes of the spate of banking financial crises seen in recent years (Scanella & Polizzi, 2021). The abovementioned perspective is consistent with the hypothesis that, even in an efficient capital market, bank directors as “the insiders” are typically presumed to have access to more meaningful decision-useful information on the anticipated future performance and credit risk of their banks than external bank stakeholders. Against this backdrop, published annual financial statements and other periodic stakeholder reports are typically the primary source of credit risk information for listed banks’ stakeholders and are generally regarded as enhancing the banks’ credit risk transparency, while at the same time addressing other information needs of a broad spectrum of bank stakeholders (Scanella & Polizzi, 2021). The International Accounting Standards Board (IASB) prescribes the accounting requirements for banks when presenting their financial statements to stakeholders. The current credit risk disclosure requirements are contained in the International Financial Reporting Standard (IFRS) 9 - Financial Instruments, which came into effect in 2018. The IASB promulgated this standard to address concerns raised by international bank stakeholders such as governments, especially the Group of Twenty (G20), and financial regulators in major jurisdictions who felt that the accounting requirements of previous IAS 39 were “a little too late” to bring stakeholders’ attention to banks’ credit risk (Altunbas, Pollizi, Scanella & Thornton, 2021). Thus, the focus shifted towards increased transparency and the quantitative disclosure of banks’ credit risk. Moreover, the standard’s credit loss provisioning approach moved away from the incurred loss model (ICL) towards the current expected credit loss (ECL) model. It also introduced increased disclosure requirements with a bias towards modeling and disclosing forward-looking information. Furthermore, in terms of this approach, banks were now required to account for and disclose all changes in expected future cash collections from their loans and advances in their credit loss provisions (IASB, 2014). The IASB argued that disclosures based on these latest requirements would benefit a broad spectrum of bank stakeholders, including shareholders, funders and regulators. In particular, it expected the new credit risk reporting dispensation to solve the adequacy and timeliness challenges raised by the stakeholders mentioned above and address information asymmetry problems, thereby enhancing market discipline in terms of relaying timely credit risk information to the market about loan values. However, the claims by the IASB about the value and objectives of its most recent credit risk reporting standards pose two interrelated challenges. The first relates to a void in the literature to back the standard-setters’ claims about the adequacy and decision-usefulness of banks’ credit risk accounting and disclosures. Although a number of studies have been conducted on corporate risk disclosures in recent times, few of them have been focused on the banking industry, especially on banks’ quantitative credit risk disclosures, with the result that there are currently few contributions in this field (Lajili, Mohsni, Polizzi & Scanella, 2022). Surprisingly, the question of the decision-usefulness of banks’ credit risk disclosures has been largely neglected. The second and primary challenge relates to the absence of a framework to empirically evaluate the adequacy and decision-usefulness of credit risk disclosure by banks. Given the previous failures and several bank stakeholders’ subsequent concerns regarding the adequacy, timeliness and empirical decision-usefulness of banks’ credit risk disclosure, it is both crucial and urgent that a means of evaluating the adequacy and decision-usefulness of such credit risk disclosures be formulated. In light of the above, the aim of the study reported in this paper was to explore a methodology that could be utilised to evaluate the adequacy and empirical decision-usefulness of banks’ credit risk disclosures.

2. RESEARCH METHODOLOGY AND THEORETICAL FRAMEWORK

A preliminary conceptual study was conducted with the objective of positing the abovementioned empirical methodology. This process began with an analytical consideration of the theoretical composition of such bank disclosures. This was followed by consideration and evaluation of such disclosures in relation to the credit risk equation and credit risk determinants. Finally, relying on analytical reasoning, an attempt was made to simultaneously synthesize and relate these variables within the theoretical valuation model within the context of listed banks, as expounded upon below. A preliminary empirical study was also conducted for the purposes of evaluating the empirical validity of the posited model, and the results are presented as part of this paper. To ensure the validity of the research responses to the complexities of the problem, a careful engagement of multiple related theories was performed in order to select the most appropriate ones. This process entailed conducting a preliminary analysis and evaluation of relevant contemporary finance, economic and corporate governance theories with the objective of identifying their potential and relevance to shed light on the proposed area of inquiry. Following this process, several theories initially stood out as being closely relevant to the current study area, and the notable ones included the valuation theory, decision-usefulness theory, as well as Fama's hypotheses of market efficiency. The central tenet of valuation theory centres around the fundamental notion that the intrinsic value, market value or price of any asset can be derived by discounting its expected future cash flows at an appropriate interest rate. Consistently with this notion, as mentioned previously, the IASB has presumed that banks' credit risk accounting and disclosures that met the IFRS 9 standards would assist stakeholders in understanding the impact of credit and, thereby, its effect on the nature, timing and uncertainty of future cash flows. Consequently, the evaluation of the adequacy and decision-usefulness of banks' credit risk disclosures posited in this study has direct implications for the validity of valuation theory. The decision-usefulness theory, on the other hand, posits important attributes that accounting information must possess in order to be useful or make a difference to the information needs of users, typically debt and equity funders (Staubus, 1995). Such attributes are typically understandability, reliability, relevance, verifiability, comparability and timeliness. The efficient market hypothesis (EMH) has its conceptual underpinnings in asset pricing theory. It is premised on the notion that, within the context of capital markets, empirical equity share prices fully adjust to reflect all the available information about the value of a company such that it is not possible for any investor to consistently earn excess returns based on this information (Clarke, Jandik & Mandelker, 2001). In their interpretation of the EMH within the capital markets context, Francis and Schipper's (1999) reasoned that in a reasonably efficient market, companies' market values drift around their intrinsic equity values. This reasoning provides a significant underpinning to logically posit a synthesis of the valuation and decision-usefulness theories to examine the banks' quantitative credit risk disclosures within the context of capital markets, as proposed in this study.

3. DISCUSSION

As alluded to above, banks' current credit risk accounting, as embodied in IFRS 9, primarily centres around the determination, at the end of a reporting period, of whether there has been a significant change in the credit risk since initial recognition. When this has been determined to be the case, IFRS 9 requires the calculation of the so-called impairments. The cornerstone of impairment modeling under IFRS 9 comprises calculating and recognising expected credit losses (ECL) (Engelmann, 2021). Thus, the critical components of modeling ECL frameworks comprise the term structure of probability of default (PD), loss given default (LGD), exposure at default (EAD) and the dynamic state of conditional variables, typically based on expected changes in macroeconomic indicators (Đurović, 2019).

A widely recognised interpretation of this requirement entails representing ECLs using the so-called “simplified indirect method” (Brito & Júdice, 2022) as a product function LGDs, EADs and the point-in-time PDs, as follows:

$$ECL_i = PD_i \times LGD_i \times EAD_i.$$

Consequently, by taking into account the time value of money, ECLs can typically also be expressed as the present value of all cash shortfalls over the expected life of the financial instrument. A common empirical approach used in both academia and practice is calculating ECL in each year of the remaining lifetime using the abovementioned ECL formula (PD x LGD x EAD), discounting the result back to time 0, adding up overall terms (Engelmann, 2021). Consistently with this approach, Engelmann, 2021, proposed a modularised approach that expresses ECLs in accordance with the following representation:

$$ECL_i = \sum_{t=0}^T \frac{(PD_{i,t} \times LGD_{i,t} \times EAD_{i,t})}{(1 + \frac{r}{12})^t},$$

where $PD_{i,t}$ is the marginal probability of defaulting of account i at time t , $LGD_{i,t}$ is the loss given default for account i when an account defaults at time t and $EAD_{i,t}$ is the exposure at default at time t for account i , r is the constant, account-specific nominal annual interest rate, and the total time horizon $t \in [0, ..., T]$, where T is determined by the loan stage (for example, 12 months for stage 1, and lifetime for all other stages). Nevertheless, when it comes to the latter (loan staging), IFRS 9 merely makes a dichotomous distinction between financial instruments where “credit risk has increased significantly since initial recognition” (SICR) and the rest of the population where this is not the case. The practical implication of this requirement is that a lifetime ECL will be required to be held in respect of the former, whereas a 12-month ECL is required for the latter. In practice, though, the staging of financial instruments (credit loans and advances) may typically often be split into three stages as opposed to just two, with the first category (1) representing performing loans, the second (2) representing under-performing loans and the third (3) representing non-performing (Brito & Júdice, 2022; Engelmann, 2021). This means that the total reported ECL figure might, paradoxically, include the so-called stage 3, even though the default is likely to have occurred. However, this conundrum might not be immediately evident in IFRS 9’s original dichotomous classification outlined above. Although much of the focus of IFRS 9 is ultimately on idiosyncratic account-specific or portfolio-specific determinants of credit or default risk, considerations are also made of the macroeconomic effects at the portfolio level. In particular, the modeling of the default probabilities (PDs) described above is widely presumed to be susceptible to the confluence of macro-economic (e.g. GDP, unemployment, inflation, etc.) and idiosyncratic, account-specific factors (income, affordability, behaviour, etc.). On the other hand, the determinants of credit risk in terms of the current literature are considered to be not only limited to IFR9’s macroeconomic and idiosyncratic or bank-specific factors mentioned above but also to include industry-specific factors (Naili & Lahrichi, 2020; Garr, 2013). Table 1 below contains a summary of credit risk determinants in terms of the current literature. Although there is no clear consensus on which of these measures are frequently modelled across banks internationally, nevertheless, it is evident that those that are linked to default probabilities such as GDP, inflation and unemployment seem to feature prominently in such models. Notably, the non-performing loans (NPL) measure represents the portion where default has occurred and whose ECL is typically referred to as “stage 3”.

Since credit risk represents susceptibility or probability, it is anomalous for the stage 3 ECL or NPL to represent unrealised credit risk to a bank. However, several authors still maintain that NPL is a credit risk determinant.

Table 1: Credit risk determinants

Bank-specific factors	Industry-specific factors	Macro-economic factors
Credit policy and implementation	State of Development	GDP growth
Bank efficiency	Competition or concentration	Inflation
Non-Performing Loans	Lerner index	Employment or unemployment
ECL and impairments	The Boone indicator	Interest rates
Bank capitalisation	Concentration ratio	Real exchange rates
Bank size		Public debt
Bank performance		Institutional environment
Loan growth		
Bank diversification		
CEO compensation		
Corporate social responsibility		
Banks' overconfidence		
Ownership identity		
Ownership concentration		

Sources: Schutte, Sello and Van Romburg (2022); Naili and Lahrichi (2022); Garr (2013); Williams (2004); Berger and De Young (1997).

Careful consideration of the IFRS 9 determinants against previously mentioned credit risk determinants reveals several notable observations. First, it is evident that industry factors such as the state of development, competition or concentration might not be captured or modeled in the ECL. Moreover, when it comes to bank-specific factors, it is evident that specific key indicators, such as bank efficiency and performance, are typically not taken into account in determining the ECL figure. In other words, when qualitative risk disclosures in the AFS are ignored, the credit risk modeled and recognised excludes industry-specific credit risk factors and bank efficiency, implying that if one were to comprehensively capture a bank's credit risk using annual financial statement ECL disclosures, necessary reconciliation adjustments would have to be made to correct for these items. At the same time, however, as alluded to above, the notion of decision-usefulness of accounting information inherently implies the empirical validity of the long-held valuation tenet that the intrinsic value of any asset can be derived by discounting its expected future cash flows at an appropriate interest rate. Furthermore, despite the question of the theory's empirical validity largely remaining an enigma among researchers of capital markets, within the milieu of publicly-traded equity shares, at the same time, capital markets researchers have over the years made significant strides in an attempt to gain a perspective and consensus regarding the particular accounting variables that are critical in determining intrinsic valuations of equity shares. In particular, following the seminal earlier theoretical contributions in the field, there has now been growing consensus over the years that by adopting Miller and Modigliani's (1961) dividend irrelevancy principle, and combining this with the assumptions of a clean surplus accounting and linear information dynamic, then the intrinsic equity market value of a company could primarily be functionally related to a company's accounting earnings and accumulated surplus, and "other information" variables (Ohlson, 1995; Ota, 2003; Collins, Weiss & Maydew, 1997) as follows:

$$IV_{jt} = P_{jt} = \beta_5 Growth_{jt} + \beta_6 Risk_{jt} + \beta_7 Earnings_Ctrl_{jt} + \beta_8 Earnings_{jt} + \beta_9 BV_{jt} + V_{jt} + e_{jt},$$

Where IV_{jt} is the intrinsic value P_{jt} is the bank share price; $Earnings_{jt}$ are the bank earnings per share; BV_{jt} is the equity residual per share; β_0 is the intercept; $\beta_1, \beta_2, \beta_3$, and so forth are the regression coefficients of the independent variables; and where e_{jt} , the error term denotes other relevant information and is independent and identically distributed with mean 0, and a variance σ_e^2 , v_t is other decision value relevant information, and where $\alpha_1 = \frac{\omega}{(R_f - \omega)} \geq 0$, $\alpha_2 = \frac{R_f}{(R_f - \omega)} (R_f - \gamma) > 0$, and $\frac{E_t[y_{t+\tau}]}{R_f^\tau} \rightarrow 0$ as $\tau \rightarrow \infty$. The presumed equivalence of the intrinsic values and share prices is primarily supported by Francis and Schipper's (1999) interpretation of Fama's (1970) hypothesis of market efficiency that market share prices drift around their intrinsic equity values. Furthermore, in a reasonably efficient market, there will be a significant correlation between these two variables that could be reliably measured over a period of time using quantitative techniques.

Consistently with the assumptions of the Ohlson (1995) original formulations, both x_t^a , the earnings variable, and v_t , the "other" information variable are expected to follow a first-order autoregressive pattern such that $x_{t+1}^a = \omega x_t^a + v_t + \varepsilon_{t+1}$, and $v_t = \gamma v_t + \varepsilon_{2t+1}$, where ε_t and ε_{2t} are unpredictable zero-mean disturbance terms. Furthermore, as Ohlson (1995) contended, the equity book values are also expected to be an unbiased estimator of market value such that, over a sufficiently long period, the unconditional expected mean value of "goodwill" ($\bar{P}_t - \bar{Y}_t$) would approximate zero, despite goodwill itself paradoxically tending to exhibit a positive serial correlation. The non-discounting of the earnings variable is consistent with Collins, Maydew and Weiss' (1997) hypothesis that while the Ohlson (1995) model included the term $\frac{(1+r_{it})}{r_{it}}$ for discounting earnings, allowing discount rates to vary across companies did not significantly improve the model's explanatory power, and thus, Ohlson's (1995) model's risk-adjusted residual income variable can be replaced with the actual reported earnings variable, thereby ultimately relating a company's equity share price around its financial year-end to a linear regression function of its earnings and equity book values. However, risk ($Risk_{jt}$) is again separately incorporated as a correlated explanatory variable. The specification of both growth and risk factors is also informed by finance theory regarding their role in equity valuation as well as evidence from previous studies that demonstrated the significance of their impact on equity valuations (Ettredge, Kwon, Smith & Zarowin, 2005, Holthausen & Watts, 2001). Moreover, the specification of negative earnings variable was informed by growing recognition among scholars of capital markets of the negative relationship that the incidence of increases in reported losses typically has on equity valuations and the explanatory value of earnings (is diminished because of losses and book values become more meaningful) over time (Hayn, 1995; Basu, 1997). Consequently, it was considered essential to incorporate them into the equation as a dichotomous dummy control variable. In recognising the empirical validity of the theoretical ECL representation outlined above, it was first presumed that the modeled macro-economic variables such as GDP, inflation, unemployment, that impact on probabilities of default (PDs) are adequately captured and can explain the variations in the PDs such, for instance, the negative relationship impact of GDP on PDs that has been widely established in the literature. Regarding the idiosyncratic factors modeled in the ECL equation, it is expected that these can be related to bank-specific factors (BF_{jt}), implying that the latter can be decomposed further, such $BF_{jt} = BF1_{jt} + BF2_{jt}$ where $BF1_{jt}$ represents idiosyncratic account or portfolio-specific factors together with the credit policy and credit policy implementation characteristics and $BF2_{jt}$ represents bank efficiency. Meanwhile, to the extent that, as already described above, the credit risk equation can be accounted for by a combination

of bank-specific factors together with correlated macroeconomic and industry-specific factors such that $CR_{jt} = MF_{jt} + IF_{jt} + BF_{jt}$, therefore bank's reported ECLs can similarly be functionally represented as follows:

$$ECL_{jti} = BF1_{jt} + MF_{jt},$$

And furthermore:

$$CR_{jt} = BF1_{jt} + BF2_{jt} + MF_{jt} + IF_{jt} + error_term.$$

Ultimately, this implies that banks' credit risk can logically be expressed in terms of reported ECLs as follows:

$$CR_{jt} = ECL_{jt} + IF_{jt} + BF2_{jt} + error_term,$$

Where the variables CR_{jt} , ECL_{jt} , IF_{jt} , and $BF2_{jt}$ respectively represent credit risk, expected credit losses, industry and bank-specific factors for bank j at time t . As indicated in Table 1 above, the frequent industry-related variables are competition or concentration, as measured by the Lerner index, the Boone indicator or the concentration ratio (see, for example, Naili & Lahrichi, 2020). IF_{jt} would typically be estimated using the Lerner index, which is a more popular measure of concentration. The index indicates the markup of price over the marginal cost or the deviation of the price from the marginal cost and is measured as follows:

$$Lerner_{jt} = \frac{(P(TA)_{jt} - MC_{jt})}{P(TA)_{jt}}$$

Where $Lerner_{jt}$ is the Lerner index and $P(TA)_{jt}$ and MC_{jt} are respectively the markup of the price over the marginal cost and the marginal cost estimated by the trans-log cost function. Consequently, the index ranges from 1 to 0, with a higher value indicating a bank's higher market power.

When it comes to bank efficiency or BF_{jt} , although several measures of bank efficiency have emerged over the years since the initial propositions by Berger and De Young (1997), it has recently been demonstrated that by first decomposing bank efficiency into technical, cost, revenue and profit efficiency and then measuring total bank efficiency using the Stochastic Frontier Analysis (SFA) results in efficiency measures that are robust and consistent across both developed, emerging and developing economies. In light of the above discussion, it is posited that banks' credit risk can be measured within a linear intrinsic equity valuation framework as follows:

$$\begin{aligned} LnP_{jt} = & (\beta_0 + u_j) + \beta_{1.1}ECL_{jt,st1} + \beta_{1.2}ECL_{jt,st2} + \beta_{1.3}ECL_{jt,st3} + \beta_2NPL_{jt} + \\ & \beta_3Lerner_{jt} + \beta_4EFF_{jt} + \beta_5Growth_{jt} + \beta_6Risk_{jt} + \beta_7Earnings_Ctrl_{jt} + \\ & \beta_8Framework_Ctrl_{jt} + \beta_9Earnings_{jt} + \beta_{10}Eq_{jt} + e_{jt}, \end{aligned}$$

where, for bank j at time t , LnP_{jt} is the logarithmic transformation of the dependent share price variable; ECL_{jt} are the reported expected credit losses for Stages 1, 2 or 3, such that $ECL_{jt} = ECL_{jt,st1} + ECL_{jt,st2} + ECL_{jt,st3}$, NPL_{jt} are the non-performing loans; $Lerner_{jt}$ is the Lerner index; EFF_{jt} is bank efficiency; $Growth_{jt}$ and $Risk_{jt}$ represent growth and risk factors;

$Earnings_Ctrl_{jt}$ and $Framework_Ctrl_{jt}$ are dichotomous dummy control variables that represent proxies for either profit or loss and the applicable credit risk reporting framework; $Earnings_{jt}$ are the bank earnings; Eq_{jt} is per share equity residual; β_0 is the intercept; $\beta_1, \beta_2, \beta_3$, and so forth are the regression coefficients of the independent variables; e_{jt} , the error term, denotes other relevant information and is independent and identically distributed with mean 0 and a variance σ_e^2 ; and u_i represents the fixed effects component applicable to the individual dummy variables due to cross-sections not included in the regression model. This implies that the proposed model specification is subject to the typical linear regression assumptions. In view of the recent developments in the analysis of capital markets data (Canitz, Ballis-Papanastasiou, Fieberg, Lopatta, Varmaz & Walker 2017), the proposed panel data analysis approach is considered best suited to evaluating functional relationships. Where relevant, transformations and principal component analysis will be exploited as analysis strategies. It is proposed that enterprise risk could be modeled using the ratio of debt to equity and growth using the ratio of market value or total capitalisation over equity book values, as in Ettredge, Kwon, Smith and Zarowin (2005). Moreover, since previous research has shown a negative relationship between an increase in the number of reported losses and the incremental value relevance of earnings over time (Collins, Pincus & Xie, 1999, Hayn, 1995), a dichotomous dummy variable could be assigned as proxies for either profit or loss respectively, similarly to Entwistle, Feltham and Mbagwu (2010). Various analysis approaches are planned to be utilised to examine the study question, the main one which will comprise cross-sectional, time-series and panel data analysis approaches. Most notably, due to the time series and panel nature of the typical empirical financial data, panel data analysis approaches could arguably be best suited to evaluate the functional relationships. Karathanassis and Spilioti (2003) have previously highlighted the benefits of such panel models in overcoming several common methodological challenges associated with autocorrelation, multicollinearity and heteroscedasticity. As these authors further point out, this approach has been shown to facilitate the estimation of unbiased and efficient estimators, and also to provide a significant number of degrees of freedom, which enable empirical researchers to overcome small sample problems associated with the estimation of the linear regression model due to the time dimension of the data. Moreover, as Canitz, Ballis-Papanastasiou, Fieberg, Lopatta, Varmaz & Walker (2017) demonstrated, an added benefit of panel data models is that, when modeling with non-stationary variables, the bias of panel estimates is lower than the bias of time-series estimates, even before any mitigation procedures for cross-sectional and time-series dependence are applied.

4. PRELIMINARY EMPIRICAL ANALYSIS AND RESULTS

For the purposes of validating the proposed empirical model, a sample comprising the top ten South African banks by market capitalisation listed on the Johannesburg Stock Exchange main bourse during the period 2000 to 2023 was selected. The start period of 2000 represents the first period that IAS32 became mandatory, and this regime ended in 2017. Thus, IFRS 9 became mandatory from the beginning of 2018 for these banks and 2023 represents the most recent period for which the empirical data was currently available. Out of the top ten banks, complete empirical data observations were available for only Absa, Capitec, Firststrand, Standard, Investec and Nedbank representing the largest and oldest of the South African banks. To avoid the empirical modeling challenges associated with scale and heteroscedasticity, all the accounting statistics (earnings, assets, credit losses) were deflated by the applicable weighted average number of shares issued as reported at balance sheet date where applicable. Moreover, the natural logarithmic transformation of the dependent share price variable was utilised. From the descriptive statistics, it was noted from the empirical observations none of the banks reported losses during the study period.

Consequently, Basu's (1997) hypothesis of the role of negative earnings was no longer applicable and the NEG variable was therefore eliminated by the regression model. Unit root tests were performed on each of the model variables using the Augmented Dickey-Fuller test statistic. All the model variables were found to be stationary at level, with the exception of the enterprise risk variable (DEBT_EQUITY), which was found to be stationary at first level. Hence, its log transformation was incorporated into the model and was found to be effective. For the purposes of modeling the reported credit losses, both the credit loss impairment charge (ECL_IS) and the credit loss provision (ECL_BS) were incorporated within the model. The results of the empirical model are shown in Table 2 below.

Table 2: Model Summary

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SCALED_EQUITY_RESIDUAL	0.007693	0.002156	3.568788	0.0005
NPL	3.18E-05	1.08E-05	2.930824	0.0040
HEPS	0.000296	0.000176	1.683790	0.0948
SCALED_ECL_B_S_	-0.024686	0.007009	-3.521945	0.0006
SCALED_ECL_I_S_	0.041022	0.012102	3.389635	0.0009
LOG(ENTERPRISE_RISK_DEBT_EQU)	-0.091534	0.102120	-0.896334	0.3718
GROWTH	-0.013080	0.034745	-0.376450	0.7072
NEG	8.336509	0.275678	30.24007	0.0000
LERNER_INDEX	-0.533228	0.568593	-0.937804	0.3502
BANK_EFFICIENCY_2	0.304652	0.060414	5.042708	0.0000
DISTURB_DUMMY	-0.146922	0.120033	-1.224006	0.2233
IFRS_DUMMY	-0.003766	0.116070	-0.032444	0.9742
R-squared	0.796362	Mean dependent var		9.133700
Adjusted R-squared	0.778151	S.D. dependent var		1.054297
S.E. of regression	0.496583	Akaike info criterion		1.522557
Sum squared resid	30.33119	Schwarz criterion		1.780803

$$\begin{aligned} \ln P_{jt} = & \beta_1 \text{Scaled_Equity_Residual}_{jt} + \beta_2 \text{NPL}_{jt} + \beta_3 \text{HEPS}_{jt} + \beta_4 \text{Scaled_ECL}(B/S)_{jt} + \\ & \beta_5 \text{Scaled_ECL}(I/S)_{jt} + \beta_6 \ln \text{Enterprise_Risk}_{jt} + \beta_7 \text{Growth}_{jt} + \\ & \beta_8 \text{Neg}_{jt} + \beta_9 \text{Lerner}_{jt} + \beta_{10} \text{Bank_Efficiency} + \beta_{11} \text{Disturb_Dummy}_{jt} + \\ & \beta_{12} \text{IFRS_Dummy}_{jt} + e_{jt}, \end{aligned}$$

As can be seen, it was clear from the model summary that changes in the variances of the specified independent variables can account for over 79.6% variance in the logarithmic-transformed equity share prices. An R-Squared value of over 25% is considered to be statistically significant (Ellis & Steyn, 2003). From the table above, it was also evident that the signs of the coefficients of the fundamental earnings (HEPS) and equity residual variables (SCALED_EQUITY_RESIDUAL) were positive. The coefficient of the equity residual variable was statistically significant beyond the 1% level. This evidence resonates with prior literature which has demonstrated the role and significance of these variables in equity valuations (Ratnaningrum & Widagdo, 2019; Murwaningsari, Utama & Rossieta, 2015). On the other hand, although the signs of the coefficients for the earning (HEPS), growth, risk, and reporting framework (IFRS_dummy) and economic disturbances (Disturb_dummy) appeared intuitive, at the 5% significance level the evidence appeared inconclusive. Similarly, the role of market concentration, as indicated by the Lerner index was unclear, as evidenced by the inconclusive evidence of its role. The latter was considered hardly surprising given the contradictory evidence of this bank concentration measure from prior studies in the South African context (Ngonyama & Simatele, 2020).

However, the evidence of the core measures of banks' credit risk was notable. This was indicated by the coefficient of the credit losses (Scaled_ECL_BS), risk impairment charge (Scaled_ECL_IS), each of which was significant beyond the 1% level, implying it has significant explanatory value that impact on equity share prices. Moreover, the negative sign of the coefficient of the credit losses (Scaled_ECL_BS) variable was intuitive, indicating that increases in credit losses negatively impact on banks equity valuations. Similarly, the non-performing loans variable (NPL) was significant beyond the 1% statistical level, underscoring its importance in accounting for variations in banks' empirical equity prices. Also notable was the role of bank efficiency as a measure of credit risk as it was statistically significant beyond the 1% level. Taken together, these results highlight the significant explanatory value of quantitative credit risk measures on banks' empirical equity share prices, which could be seen as evidence of the empirical validity of the posited model.

5. CONCLUSION

The methodology posited in this section overcomes previous methodological gaps and makes it possible to evaluate the IASB's claims regarding the adequacy and decision-usefulness of banks' credit risk disclosures. As such, it is hoped that such a methodology will provide a valuable foundation to several bank stakeholders such as researchers, standard-setters, bank supervisors and regulators.

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ENHANCING LANGUAGE LEARNING THROUGH INSTITUTIONALIZED TRANSMEDIA STORYTELLING: INNOVATIONS IN EDUCATION AND KNOWLEDGE MANAGEMENT

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ABSTRACT

Contemporary education is undergoing significant transformations due to interactive digital media, which reshape cognitive development and learning while introducing innovative knowledge management strategies. Effective knowledge management in foreign language teaching enhances accessibility and fosters innovation, resulting in measurable educational outcomes. This study examines the integration of institutionalization and transmedia teaching methods within high school foreign language curricula to improve knowledge dissemination and utilization. Applying an experimental methodology, the research incorporates all dimensions of knowledge management—creation, sharing, utilization, and storage—to demonstrate the efficacy of transmedia teaching in achieving learning objectives.

Keywords: *Education and knowledge management, Transmedia storytelling, Institutionalization, Language learning*

1. INTRODUCTION

Contemporary education is marked by significant changes in the media landscape, due to changing patterns of cognitive and intellectual development influenced by interactive media use. Not only do new media affect modern pedagogy but they also provide innovative ways and strategies of knowledge management. One of the challenges posed to traditional teaching methods is certainly the speed of young people media skills acquisition in an informal, out-of-school environment where they actively use technology not only for communication, but also to create, publish and share multimodal content. A comprehensive set of competencies acquired through informal learning strategies in adolescents, is defined as transmedia literacy since it includes "skills, practices, values, priorities and strategies for learning and sharing knowledge, tailored to the dynamics of contemporary participatory cultures" (Scolari, 2018, p. 15). Therefore, the younger generation of media users is characterized not only by a strong digital orientation, but also by the fact that they give priority to the user experience and demand something more than just observing content, both in media use and in education. This paper aims to show how to innovatively use technology for knowledge management in achieving the learning outcomes of high school foreign language curricula through the dissemination of knowledge and institutionalization using the transmedia teaching method. Knowledge management, a theoretical concept that drew parallels from the organizational sector to education, unites three basic organizational resources - people, processes and technologies with the aim of enabling more efficient use and sharing of information (Petrides and Nodine, 2003, p. 10). Since organizational knowledge is viewed as explicit - precise and codifying, and tacit - intangible and personal (Nonaka and Takeuchi, 1995), knowledge management technologies enable the processes of knowledge transfer between these two types of knowledge through socialization processes (tacit to tacit) at meetings or through synchronous collaboration, then through externalization processes (tacit to explicit) through group work or e-learning.

Furthermore, there are also combinations of these technological processes (explicit to explicit) through search tools and document management systems as well as internationalization processes (explicit to tactic) such as visualization or innovation support tools (Marwick, 2001, p. 815). In the context of learning and teaching English as a foreign language, knowledge management is considered an effective process when it is easily accessible and when it promotes innovation to achieve measurable results (Ahmed et al., 2022, p. 3). In order to include all dimensions of knowledge management: creation, sharing, utilization and storage of knowledge (Romero-Carazas et al., 2023, p. 6) to achieve the given learning outcomes and goals, this paper will create a transmedia teaching method based on the premise of transmedia storytelling "a process in which the constituent elements of fiction are systematically dispersed across multiple delivery channels for the purpose of creating a unified and coordinated entertainment experience" (Jenkins, 2007, para. 2). In education, the transmedia method is an innovative educational approach that exploits multiple media platforms to enable immersive learning experiences. As such, it is based on a narrative that represents a separation from traditional linear texts by spreading story elements through different media such as literature, film, digital media, games and interactive experiences. An integral aspect of this method is the recognition of informal learning spaces outside traditional classrooms, such as online platforms, social media, blogs, video games and fanfiction where individuals actively apply transmedia literacy skills. These skills are acquired through informal learning strategies and therefore the roles of teachers and learners change, since the teacher no longer is the authority of knowledge, but becomes a collaborative moderator of the teaching process (Scolari, 2018). Transmedia teaching method includes several key elements that encompass different aspects of educational practices such as the dissemination of curriculum materials across different media platforms with the aim of actively involving students in the joint creation of knowledge (Tombleson, 2024, p. 7). The elements of transmedia play engage students in informal and experimental learning experiences (Herr-Stephenson et al., 2013) through a culture of participation that encourages sharing, repurposing and distributing content through platforms that are accessible and easy to use for students, where students share their own content and personal narratives in the context of learning (Tombleson, 2024, p. 8). The transmedia skills used by students refer to the skills of searching, judging, performing, playing and navigating in transmedia learning (Kalogeras, 2014; Scolari, 2018). The "narrative world" that is created for teaching generates connection through communication, interaction and engagement between resources, students, teachers, and technology (Herr-Stephenson et al., 2013). It should be noted that a transmedia learning experience connects informal learning contexts with traditional classrooms, emphasizing learning through hands-on engagement (Scolari 2018, Costa-Sánchez and Guerrero-Pico 2020). The multifaceted nature of transmedia learning highlights its potential to create dynamic educational experiences that surpass traditional boundaries (Tombleson, 2024, p. 7). Consequently, this work advocates for the institutionalization of secondary schools and museums. The museum is an information institution according to the ETakSA complex since it encompasses the emission, transmission, accumulation, selection and absorption of information (Plenković, 2007, p. 29). On the one hand, the museum is an institution of storage and dissemination of information; while on the other hand, it is a potent transmedia environment that integrates technology into the transmission and preservation of cultural heritage through a storytelling strategy that encourages an active audience. In a museum context, transmedia storytelling encourages audiences to dive deep into narrative worlds and encourages individuals to bring the physical and virtual elements of heritage narratives out of the museum into their everyday lives, thereby prolonging the encounter with heritage (Song, Gilardi and Lam, 2024, p. 9).

This research addresses the institutionalization of secondary schools and museums in language teaching, noting the limited studies on the use of transmedia methods for teaching foreign languages in the Croatian education system (Tuksar, 2018) and the paucity of educational research based in museum contexts (Domšić, 2021; Mavrin, Mesić, and Pavin Banović, 2023).

2. METHODOLOGY

The research was conducted in the period from March to June 2022 in English language classes in six second and third grades of four secondary schools from the Međimurje County where an experimental research method was applied. The aim of this study was to examine whether using technology for knowledge dissemination and the institutionalization of secondary schools and museums, alongside the transmedia method of teaching, affects the achievement of learning outcomes in secondary school foreign language curricula. Based on this, the following hypotheses were formed:

- H1: The creation of a communication platform for the dissemination of knowledge contributes to the achievement of the set educational outcomes.
- H2: Institutionalization of transmedia storytelling affects the development of students' language competence.

2.1. Research phases:

2.1.1. Knowledge creation

In the initial phase of the research, teaching methods were developed for both the control and experimental groups of students. The teaching goals and outcomes were aligned for both groups in accordance with the current English language curriculum for the unit on art, which included the use of art-related vocabulary, describing museum exhibits, museum presentations, understanding texts about art, and presenting elements of cultural heritage. For the control group, teaching materials and methods were selected based on the textbook and accompanying materials provided by the publisher. A traditional teaching method focusing on the four language skills—writing, listening, speaking, and reading—was employed.

When creating the transmedia teaching method for the experimental group of students, the following elements were included:

- 1) Guidelines for narrative selection (Kalogeras, 2014):
 - How can the narrative of arts and heritage be integrated into the existing curriculum?
 - Is the narrative aligned with the learning objectives and outcomes?
 - Does the narrative engage students and enhance learning effectiveness?
 - Does the narrative contain a story that is relevant to the art curriculum?
 - Can students create story extensions that provide educational value?
- 2) Teaching materials were selected to create an expandable narrative universe, are interactive and encourage student engagement. These materials included authentic language resources such as blogs, podcasts, TED Talks, and interactive applications like Google Arts and Culture.
- 3) Equivalent tasks were formulated for both groups to complete during their visit to the Museum of Intangible Cultural Heritage, The Treasury of Međimurje museum, within a genuine transmedia environment showcasing exhibits in various media formats. These included auditory elements such as musical heritage, audio-visual presentations like animations depicting legends, short video clips, and hyperrealistic statues. Additionally, students selected English as preferred language for exhibit descriptions. Concurrently, an immersive narrative escape room experience (Fotaris and Mastoras, 2019), was developed specifically for the experimental group. In addition to tasks similar to those assigned to the control group, the escape room incorporated several narrative-based challenges within a structured narrative framework.

2.1.2. Knowledge utilization

The second phase of the research began with the consent of the respondents, which ensures compliance with the General Data Protection Regulation (GDPR) and guaranteeing the anonymity of the student participants. Afterwards, the students were divided into control and experimental groups based on predetermined criteria: their proficiency in the English language, as assessed by the Cambridge English Language Assessment - General English test¹, the CEFR standards (2020), their performance in a pretest assessing vocabulary related to art, and the class size. Once the groups were established, the control group received instruction through traditional teaching methods, while the experimental group was taught using the transmedia approach over the course of eight teaching hours. The final part of both methods included a visit to The Treasury of Međimurje museum according to the previously described tasks. Afterwards, the students were given the task of creating a transmedia extension (Sánchez-Martínez and Albaladejo-Ortega, 2018, p. 54) on the following topics: The concept of an unusual museum; How to make contemporary art attractive?; Why visit the Treasury of Međimurje museum?; Intangible cultural heritage; to facilitate this task, students were provided with digital tools and were given a two-week deadline to complete their extensions.

2.1.3. Knowledge sharing

Within the Padlet platform, boards were created for each individual class where students posted the transmedia extensions they had created. The platform was chosen as a teaching tool since posts can be commented on, and students were encouraged to collaborate and provide feedback on their colleagues' transmedia extensions.

2.1.4. Knowledge storing

After the implementation of the teaching methods, a visit to The Treasury of Međimurje museum and the sharing of transmedia extensions, both groups underwent a posttest assessing vocabulary related to the art teaching unit. Subsequently, the final phase of the research involved the analysis and interpretation of the results, which were quantitatively processed.

3. RESULTS

Six second and third high school classes (N=99 students), general gymnasium students and tourism and hotel technicians participated in the research from the High School Prelog, the Economic and Trade School Čakovec, Josip Slavenski Gymnasium Čakovec and Technical School Čakovec (Table 1). The results of this research are a part of the doctoral dissertation *The Application of Transmedia Storytelling in the Development of Communicative Language Competence*, and it should be emphasized that the research was conducted in several phases, whereby the number of respondents in both groups varied due to the restrictions caused by the Covid-19 pandemic, as students were absent from classes due to isolation and the number of students in the classes increased during the research due to the unstable political situation in Europe. The classes were divided into control and experimental groups (Table 1) according to the results of determining the level of knowledge of the English language (CEFR, 2020) after taking Cambridge General English test, the number of students in the class, and the results of the vocabulary pretest related to the art teaching unit, which show that there is no statistically significant difference between the groups (Table 2).

Table following on the next page

¹ <https://www.cambridgeenglish.org/test-your-english/general-english/>

Experimental group			Control group		
School	Class and orientation	Number of students	School	Class and orientation	Number of students
Technical School Čakovec	3 rd , general program gymnasium	18	Prelog High School	3 rd , general program gymnasium	15
Economic and Trade School Čakovec	3 rd , tourism and hotel technician	18	Josip Slavenski Gymnasium Čakovec	2 nd , general program gymnasium	23
Economic and Trade School Čakovec	2 nd , tourism and hotel technician	15	Prelog High School	2 nd , general program gymnasium	10
Total		51	Total		48

Table 1: number of students in experimental and control group

question	Control group		Experimental group		SCP	t
	mean	st.dev	mean	st.dev		
1	0.64	0.49	0.44	0.50	0.10	1.91
2	0.80	0.41	0.84	0.37	0.08	0.48
3	0.95	0.21	0.84	0.37	0.06	1.73
4	0.77	0.42	0.53	0.50	0.10	2.45
5	0.14	0.35	0.09	0.29	0.07	0.73
6	0.61	0.49	0.44	0.50	0.10	1.62
7	0.59	0.50	0.49	0.51	0.11	0.93
8	0.45	0.50	0.51	0.51	0.11	0.56
9	0.43	0.50	0.33	0.48	0.10	0.96
10	0.80	0.41	0.76	0.43	0.09	0.45
11	0.86	0.35	0.91	0.29	0.07	0.73
12	0.84	0.37	0.80	0.40	0.08	0.49
13	0.61	0.49	0.44	0.50	0.10	1.62
14	0.45	0.50	0.22	0.42	0.10	2.35
(Critical value of t with P=0.05 is 2.06)						

Table 2: Vocabulary pretest results for the control and experimental group

3.1. Knowledge dissemination

The respondents created eighty-nine transmedia extensions on one of the given topics using a digital tool of their choice. They then published these extensions on the Padlet application within a board specifically created for their class (Figure 1). Transmedia extensions were submitted by 89 students, 43 from the control group and 46 from the experimental group of respondents.

Figure following on the next page

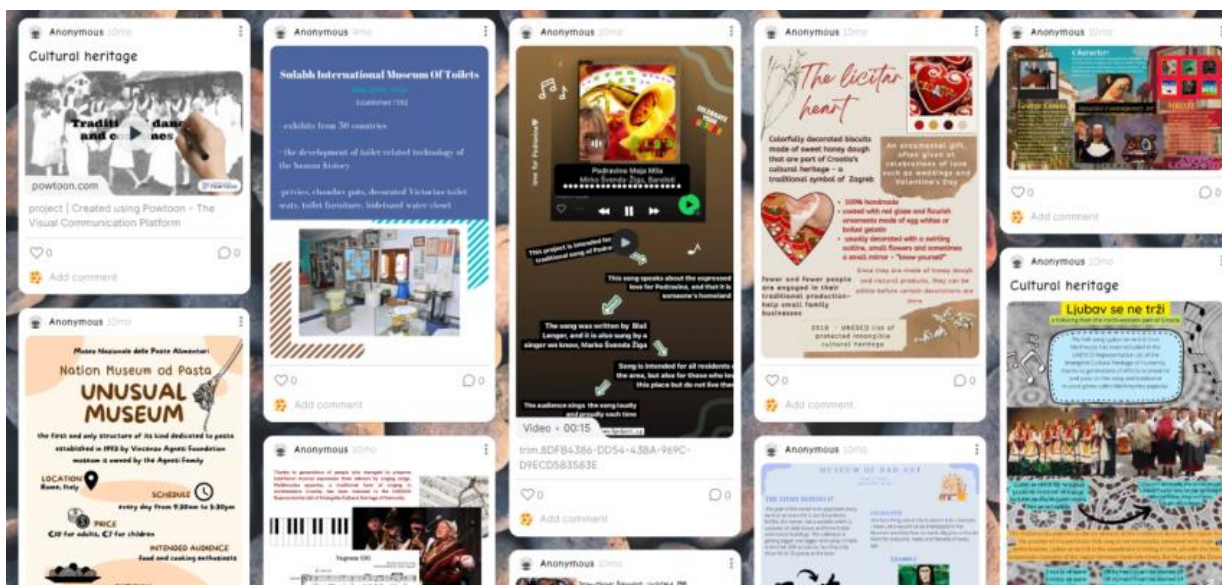


Figure 1: Published transmedia extensions on the Padlet application

The analysis of transmedia extensions showed that 49.4% of students chose the topic Why visit The Treasury of Međimurje museum, 44.9% of respondents addressed the topic of the Unusual Museum, while 3.4% of respondents chose How to make contemporary art attractive and 2.2% Intangible cultural heritage using digital tools (Table 3). The majority of students, 60.7%, created an extension in the form of a poster using the Canva application (Figure 2), 25.8% of students created a presentation in PowerPoint or the Prezzi application, while 13.5% of students created a video work with one of the applications such as Powtoon (Figure 3).

		Counts	Total	Proportion	p
Topic	The concept of an unusual museum	40	89	0.449	0.397
	How to make contemporary art attractive	3	89	0.034	< .001
	Why visit the Treasury of Međimurje museum	44	89	0.494	1.000
	Intangible heritage	2	89	0.022	< .001
Form	Poster	54	89	0.607	0.056
	Presentation	23	89	0.258	< .001
	Video work	12	89	0.135	< .001
Proportions tested against value: 0.5.					

Table 3: Descriptive statistics of the analytical rubric of students' transmedia extensions

The creation of a communication platform for the dissemination of knowledge in which students shared their work with colleagues and the teacher indicates that the students independently chose the topic according to their own preferences. They presented the heritage of their region through the Međimurje traditions of panning for gold in Donji Vidovac, the life and work of Florijan Andrašec, the making of Međimurje lace from Sveta Marija, basketry in Kotoriba (Figure 3) and legends about Pozoj (dragon) related to Čakovec (Figure 2).

Figure following on the next page

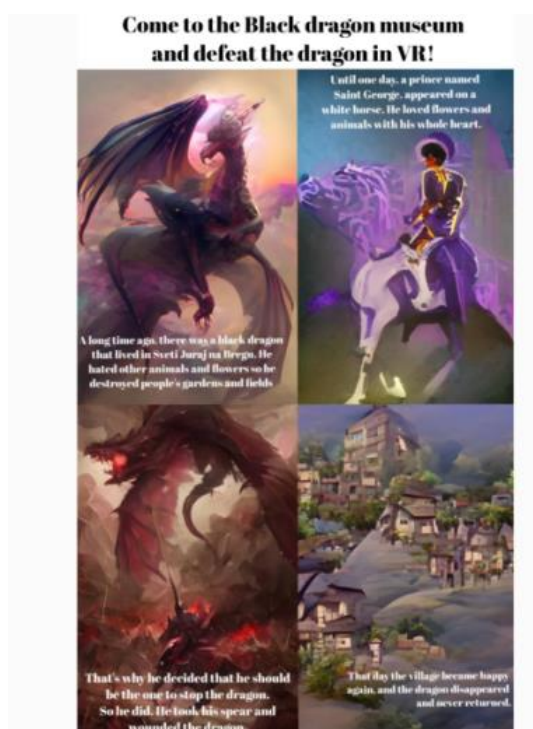


Figure 2: Transmedia extension of students in the form of a poster



Figure 3: Transmedia extension of students in the form of video

Both groups of respondents chose all topics and there is no statistically significant difference between them. Some have chosen unusual museums in the world such as the Museum of Salt and Pepper Mills, the Museum of Illusions or the Museum of Broken Relationships while some have designed their own museum such as the Shoe Museum or the Museum of Your Own Art where visitors make their own exhibits. In some of the extensions, students incorporated humor, suggesting authenticity in the communication context, as prescribed by CEFR (2020). According to CEFR guidelines, language teachers are expected to design communication situations that mirror natural interactions to maximize the effectiveness of teaching. This was accomplished through the task, as students integrated humor into their extensions and devised imaginative concepts such as the Potato Museum in the village of Belica, renowned for its potato production and featuring a potato sculpture. Additionally, they conceived the Wandering Museum, inspired by the humorous wedding tradition of Međimurje, where the newlyweds' home is humorously adorned with thatch, feathers, or branches. The students utilized art-related vocabulary, described museum exhibits, and presented aspects of cultural heritage by sharing their works on the Padlet platform. These activities align with the learning outcomes and goals outlined in the English language curriculum pertaining to the topic of art, thus confirming the first hypothesis of this study.

3.2. Institutionalization of transmedia storytelling

After the implementation of the teaching methods and the visit to the Museum, the results of the pretest and posttest of the control group's vocabulary were compared, with a t-test for dependent samples (Table 4). The results of the t-test show that there is a statistically significant difference in the answers between the pretest and the posttest on the fifth question of the vocabulary test in the control group ($t=2.55$, $p=0.05$).

question	pretest		posttest		SCP	t
	mean	st.dev	mean	st.dev		
1	0.64	0.49	0.73	0.45	0.10	0.90
2	0.80	0.41	0.83	0.38	0.08	0.36
3	0.95	0.21	0.95	0.22	0.05	0.00
4	0.77	0.42	0.83	0.38	0.08	0.71
5	0.14	0.35	0.37	0.49	0.09	2.55
6	0.61	0.49	0.66	0.48	0.10	0.49
7	0.59	0.50	0.68	0.47	0.10	0.87
8	0.45	0.50	0.46	0.50	0.11	0.09
9	0.43	0.50	0.54	0.50	0.11	1.04
10	0.80	0.41	0.85	0.36	0.08	0.61
11	0.86	0.35	0.93	0.26	0.07	1.07
12	0.84	0.37	0.93	0.26	0.07	1.33
13	0.61	0.49	0.63	0.49	0.10	0.19
14	0.45	0.50	0.44	0.50	0.11	0.09

Table 4: T-test results of the pretest and posttest of vocabulary of the control group

On the performed t-test to compare the answers of the pretest and posttest of vocabulary for the experimental group (Table 5), the results show that there is a statistically significant difference in the answers to five different questions. The experimental group achieved a statistically significant result on the first ($t=3.10$, $p=0.05$), fifth ($t=5.79$, $p=0.05$), sixth ($t=2.55$, $p=0.05$), eleventh ($t=2.06$, $p=0.05$) and fourteenth ($t=4.34$, $p=0.05$) question.

question	Pretest		Posttest		SCP	t
	mean	st.dev	mean	st.dev		
1	0,44	0,50	0,75	0,44	0,10	3,10
2	0,84	0,37	0,93	0,25	0,07	1,34
3	0,84	0,37	0,95	0,21	0,06	1,72
4	0,53	0,50	0,34	0,48	0,10	1,83
5	0,09	0,29	0,59	0,50	0,09	5,79
6	0,44	0,50	0,70	0,46	0,10	2,55
7	0,49	0,51	0,64	0,49	0,11	1,41
8	0,51	0,51	0,50	0,51	0,11	0,09
9	0,33	0,48	0,50	0,51	0,10	1,62
10	0,76	0,43	0,84	0,37	0,09	0,94
11	0,91	0,29	1	0	0,04	2,06
12	0,80	0,40	0,93	0,25	0,07	1,83
13	0,44	0,50	0,64	0,49	0,10	1,91
14	0,22	0,42	0,64	0,49	0,10	4,34

Table 5: T-test results of the pretest and posttest of vocabulary of the experimental group

The study's findings on the impact of the institutionalization of the transmedia method, while employing narrative teaching approach and using interactive teaching materials which foster storytelling, as well as situating instruction within the authentic transmedia context, demonstrate a positive effect on the enhancement of students' language competence. The results of the t-test comparing the pretest and posttest vocabulary scores in the experimental group, taught using the transmedia method, indicate a statistically significant improvement in one-third of the responses, thus confirming the H2 hypothesis.

4. CONCLUSION

The conducted research tried to answer how to use technology for knowledge management in achieving the learning outcomes of high school foreign language curricula. The created transmedia teaching method integrated and disseminated the knowledge of digital skills that students possess in the formal education system through the institutionalization of high schools and museums, thus bridging the gap between school and extracurricular learning experiences. Such an educational approach is dynamic, encourages innovation and experimentation, and enables students to actively participate in the use of knowledge. Through the assignment of creating a transmedia extension disseminated on the Padlet platform, students gained insight into their peers' work, allowing them to compare production abilities and actively apply their knowledge of art to achieve the prescribed language outcomes and goals. In this way, the disproportion of the speed of changes in the media landscape of students and the speed with which they enter the educational process is answered, since the acquired skills of transmedia production were effectively integrated by students into formal educational context (Scolari, 2018). By creating transmedia extensions, students utilized personal narratives based on familiar examples, enhancing their stories' potential for interactive communication. Through dissemination, they engaged directly with an audience, anticipating feedback. This process also addressed the dimensions of knowledge utilization and sharing within the field of knowledge management. In conclusion, the findings of this research highlight the potential of transmedia storytelling as an innovative educational strategy that enhances knowledge retention and improves communicative linguistic competence in a foreign language. By embracing the participatory nature of transmedia narratives and leveraging digital tools for immersive learning experiences, educators can create dynamic and engaging learning environments that cater to the diverse needs and preferences of today's learners.

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RASPBERRY PI APPLICATIONS IN TEACHING PRACTICES: A SYSTEMATIC REVIEW

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ABSTRACT

In a dynamic world, education is constantly evolving with the development of innovative technologies that support the learning process by providing experiential learning. These advancements are transforming the content and form of education, enhancing students' learning experiences and results. Raspberry Pi computers have the potential to advance students' programming skills and prepare them for real-world applications with practical assignments and hands-on experience. For this purpose, we have conducted a systematic literature review on Raspberry Pi applications in the higher education process by following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol. The data were acquired through a comprehensive examination of findings from studies conducted over the previous 3 years (2021–2024), with a focus on 21 key studies selected from 286 academic papers published in the Scopus scientific database. The article aims to provide a comprehensive analysis of the literature to present the latest research about the support provided by Raspberry Pi in educational environments with respect to improvements in teaching strategies and its impact on the learning process of programming languages. The results of this study encompass the numerous advantages and challenges pertaining to the implementation of Raspberry Pi in the teaching strategies. The review outlines prospective future trends aimed at augmenting students' educational experiences, suggesting avenues for further improvement in teaching practices. Furthermore, results highlight potential ways to maximise the benefits of the change in teaching methodology with respect to lowering withdrawal rates and improving academic results, contributing to the existing knowledge on the use of smart technologies.

Keywords: *higher education, Raspberry Pi, systematic review, teaching*

1. INTRODUCTION

The integration of digital technologies has become imperative, mainly due to rapid technological advancement in higher education and the greater interest in understanding learners' unique needs (Lyngdorf, Jiang, and Du, 2024). Technological breakthroughs have emerged as approaches in higher engineering education to transform educational and pedagogical practices to enhance the learning and teaching experiences, prepare students for the needs of industry, and foster innovation (Ramandanis and Xinogalos, 2023; Hamash, Ghreir and Tiernan, 2024). In general, programming has been found to be one of the most complex subjects in the computer science curriculum, having an effect on high dropout and failure rates (Ariza, 2022).

Whereas factors that lead to difficulties and challenges in teaching and learning programming languages have long been an area of research, there hasn't been much focus on the systematic assessment of the efficacy of instructional strategies and environments that support the acquisition of programming knowledge and abilities. (Gomes and Mendes, 2014; Medeiros, Ramalho and Falcao, 2019; Scherer, Siddiq and Sánchez Viveros, 2020) Educators have explored ways to facilitate the understanding of abstract concepts and maximize the effects of teaching programming through innovative approaches such as the Project-Based Learning Model and Problem-Based Learning Model instead of traditional teacher-centered pedagogy (Anazifa and Djukri, 2017). With this in regard, aspects such as problem-solving, active experimentation, and learning-by-doing, highly integrated in physical computing, emerged as effective teaching methods for developing programming abilities. Raspberry Pi (RPi) has been significantly implemented in physical computing education in science, technology, engineering, and mathematics to enhance educational experiences. Its affordability makes it accessible to educational institutions, allowing students to learn programming languages through practical application. Students can work on real-world projects like building smart mirrors, home automation systems, water coolers, and solar powered by Raspberry Pi, developing problem-solving, collaborative skills, and creativity. Thus, we are interested in uncovering teaching methods that can enable transformational education experience in learning programming, highlighting the challenges and advantages of implementing Raspberry Pi in the teaching strategies, and identifying emerging innovative teaching methods. Hence, this systematic review addresses the following three research questions through a review of existing literature:

- RQ1: How can Raspberry Pi computers effectively support the learning process of programming?
- RQ2: What are the challenges and advantages of implementing Raspberry Pi in the teaching strategies?
- RQ3: What are the future trends in using Raspberry Pi in education?

2. METHOD

The article aims to provide an in-depth review of the literature to present the latest trends regarding the support provided by Raspberry Pi in educational environments with respect to improvements in teaching strategies and the learning process of programming languages. The PRISMA framework is a valid method for systematic literature reviews, ensuring the scientific value and integrity of the material presented; thus, it was applied in our work (Page et al., 2021). This approach, based on a predetermined search strategy with explicit objectives, allows for the critical study and assessment of research on a subject. It requires specific guidelines and a methodical approach to collect documents and discusses their limits and contributions for evaluation. The research started with a Scopus search engine research for relevant material. A thorough search query was created following a two-phase creation step in order to locate the pertinent articles. The final results have been determined by specific criteria that were applied to decide which articles had to be included and which were to be left out.

2.1. Search Strategy

The investigation utilized Scopus as the primary database for identifying relevant papers. The pertinent title and abstract of the publications obtained were examined to assess the text's capability and address the research questions. Furthermore, Scopus integrates connected academic literature from various fields, diversified data, and a highly organized abstract and citation database ('Scopus', no date).

The literature search was conducted between December 2023 and March 2024 using the search string (Table 5) in title, abstract, and keywords. Preliminary results yielded 286 articles from Scopus, reflecting the broad range of research in the field.

TOPIC	SEARCH TERMS
Raspberry Pi	"Raspberry Pi"
Context	"Teaching"

Table 4: Search strategy

Scopus's search query was refined by combining parameters such as publication year, document type, subject area, study type, language, population, and subject area with established criteria. The resulting search query is defined as:

Refinement to [LIMIT-TO (PUBYEAR , 2024) OR LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) AND (LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SUBJAREA , "COMP") OR LIMIT-TO (SUBJAREA , "ENGI")) AND (LIMIT-TO (EXACTKEYWORD , "Raspberry Pi") OR LIMIT-TO (EXACTKEYWORD , "Teaching")) AND (LIMIT-TO (LANGUAGE , "English"))]

The final search query (Table 4) was applied in Scopus database in the field of education and finally identified 49 records which were subsequently assessed through a particular selection procedure.

2.2. Inclusion and Exclusion Criteria

Following a systematic research strategy, researchers assessed the obtained articles according to predetermined criteria to evaluate their relevance with research questions. The review focuses on recent articles that are more likely to contain accurate and reliable data due to their use of the latest research techniques and methodologies. Specific criteria were used to include a large number of publications. The search process was completed in stages, starting with a generic search in Scopus to find relevant literature sources related to the topic and research question. This review aimed to select studies based on specific inclusion and exclusion criteria. The criteria included publication period, document type, subject area, study type, language, population, and research topic. Only journal articles and conference papers were considered, and studies were chosen based on relevance, type, language, and applicability to the target demographic (Table 5).

	Inclusion Criteria	Exclusion criteria
Publication period	Published between 2021 – present (March 2024)	Published before 2021
Type of document	Journal article, conference paper	Literature review research, report,
Subject area	Computer science, (engineering)	Social sciences, Mathematics, Energy, Medicine...
Type of study	Dimensions AI (preprint, article, chapter)	Dimensions AI (monograph, proceeding, edited book)
Language	English, Croatian	Every other language
Population	Higher education	Primary and secondary education
Research topic	Use of Raspberry Pi in education	Doesn't use Raspberry Pi

Table 5: Inclusion and exclusion criteria

2.3. Selection of Studies

A total of 49 articles were initially retrieved from the Scopus database. The document underwent a screening process consisting of 3 steps: (1) identification, (2) screening, and (3) inclusion. In the first step, the title and abstract of the articles were evaluated. If the title was irrelevant to the selected topic, the abstract would be assessed. The next step was to analyze if the abstract was thought suitable. A determination was made on the document's inclusion and exclusion criteria. This screening phase reduced the number of articles to 21. Figure 2 shows a comprehensive synopsis of this screening.

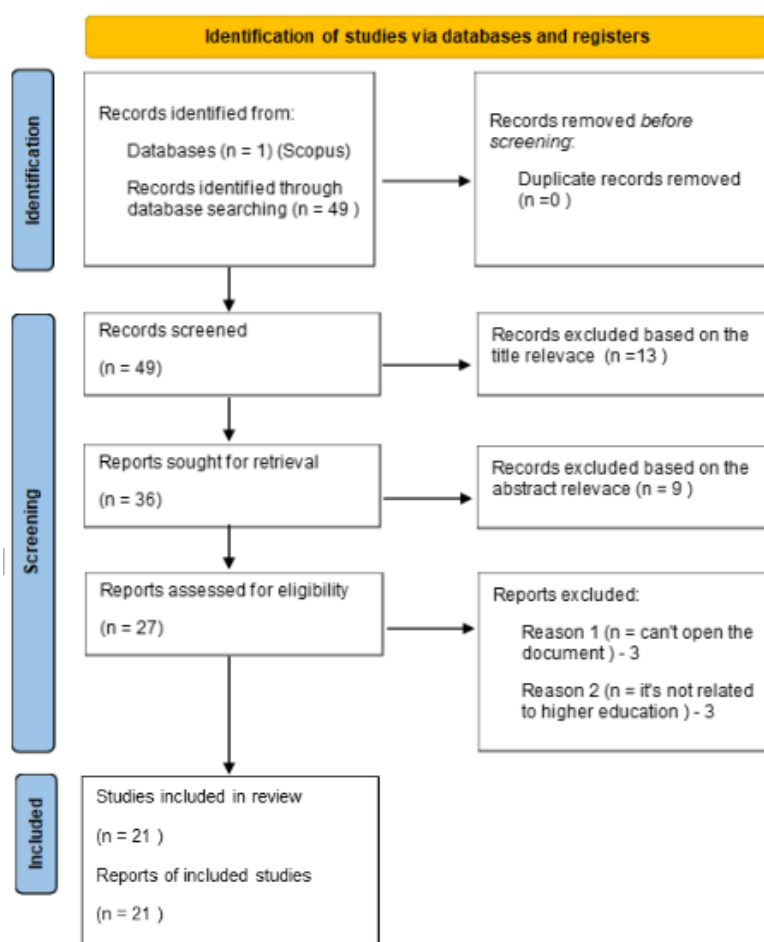


Figure 2: PRISMA framework flowchart

3. RESULTS

Following the collection of studies relevant to the application of Raspberry Pi in education, 21 articles were selected for systematic review. Upon examining the publication years of the selected articles, it becomes apparent that the majority were published in 2022 and 2023, with eight articles each year, while only 3 were published in 2021. Additionally, at the outset of 2024, 2 articles were published. The proportion of conference content is at 71%, indicating its popularity in presentations where exhibitors showcase the benefits of using Raspberry Pi devices. The popularity in scientific articles is 29%, which suggests the early stage of the exemplary use of Raspberry Pi devices in education, with potential for further development and wider application. Furthermore, the review revealed that a wide variety of countries contributed to the literature, highlighting global interest and suggesting that findings may be applicable across different cultural and institutional settings.

Notably, the highest number of studies originated from the United States, with 43%. This was followed by Spain, with 14%, and Colombia, with 10% (Figure 3).

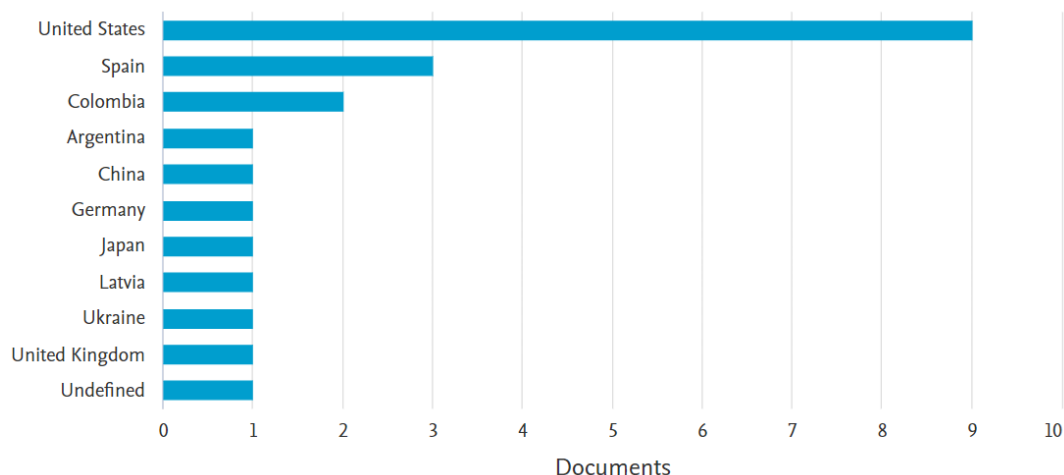


Figure 3: Distribution of the studies by county (Source: authors)

Figure 4 presents the share of scientific papers that apply Raspberry Pi in education in various academic disciplines. The most prominent in the integration of Raspberry Pi devices into educational processes are ICT technology sciences, engineering, and social sciences. The application in other scientific branches is significantly less. This trend reflects the wide applicability of Raspberry Pi technology, especially in areas closely associated with technological innovations and education.

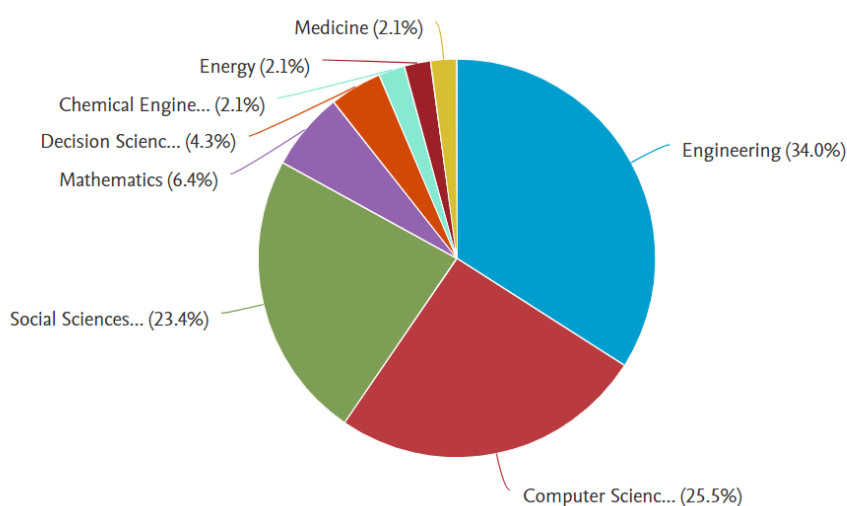


Figure 4: Analysis of subject areas (Source: authors)

Figure 5 presents the co-occurrence network map that reflects keyword relationships and identifies main themes and their interconnections within selected articles using the Biblioshiny tool ('Bibliometrix', no date). Each node represents a keyword that frequently appears in research articles. The nodes are colored differently to highlight various thematic groups or clusters. Lines between nodes represent how often two keywords appear together in the same article. The red node is focused on topics related to Raspberry Pi, student projects, hardware systems, and development. The blue node is focused on teaching-related topics.

These themes represent either emerging or potentially declining relevance. Examples within this category include assessment, teaching, and materials, denoting specific aspects of assessment and teaching that currently exhibit less development or significance.

4. DISCUSSION

This review addresses the research questions given by a detailed examination of the data obtained from the qualitative and quantitative content analysis of the 12 selected research papers. By revealing practical implications, trends, and insights, this thorough investigation hopes to contribute to a deeper understanding of the research topic.

- RQ1: How can Raspberry Pi computers effectively support the learning process of programming?

Optimizing learning settings, increasing efficiency, and harmonizing the educational ecosystem all depend on an awareness and comprehension of the ideas underlying the learning process. With more educators interested in making programming accessible to young students, learning programming can bring students closer to the profession and the "know-how" and develop their skills in a hands-on environment. Students can enhance their understanding of abstract concepts through physical computing and bridge the gap between theoretical programming knowledge and practical application. Hence, The Raspberry Pi is a valuable tool in learning programming, offering a low-cost, accessible, and practical platform for students to experiment with programming concepts and physical computing (Ariza and Gil, 2022). Students learn to set up the processor board, connect peripherals, and run Python programs on the processor board (McLauchlan *et al.*, 2022). A basic IoT learning kit using a Raspberry Pi board and a collection of sensors can be utilized for IoT-based applications and projects as part of the senior design capstone courses (McLauchlan *et al.*, 2022; Parejo *et al.*, 2022). The teaching strategy focused on embedded programming as a crucial skill in IoT, robotics, communication networks, and industrial automation helps students develop problem-solving, computational thinking, and programming skills while fostering interest and motivation in learning embedded devices (Ariza, 2022). The authors predominantly mention Raspberry Pi and Python programming language as an educational approach to enhance programming skills through the implementation of project-based learning (PBL) methodologies, emphasizing their effectiveness in various applications (McLauchlan *et al.*, 2022; Xu, 2023; Rios *et al.*, 2024). Specifically, these studies highlight the application of active teaching methodology involving real-world projects like 3D printing and Raspberry Pi devices (Rios *et al.*, 2024), a blended laboratory design using Raspberry Pi Pico (Davidson, Dang and Vasilakos, 2024), building a Raspberry Pi cluster and an interactive traffic light controller system (Xu, 2023). Furthermore, (Mamchur, 2023) suggests that Raspberry Pi can be applied to these diverse areas, such as machine learning. To support remote student engagement, remote laboratories like RaspyLab can be utilized for learning programming with Raspberry Pi and Python, fostering collaborative and hands-on activities (Ariza and Gil, 2022). Apart from Python, C++ is found to be employed as a programming language in lab projects on the Raspberry PI-Enhanced VEX Robot as a Project-Based Learning (PBL) tool for advancing programming skills and gaining hands-on experience with practical software design and real-world algorithm implementation (Powell, Elmesalami and Ibrahim, 2022; Ma *et al.*, 2023). Additionally, studies imply that Raspberry Pi 4B-based teaching platform could be leveraged for learning a basic robot programming language (Wei *et al.*, 2023), parallel and distributed programming (OMP and MPI)(Adams *et al.*, 2021; Catalán, Carratalá-Sáez and Iserte, 2021) as well as ARM assembly language(Fuentes *et al.*, 2022).

- RQ2: What are the challenges and advantages of implementing Raspberry Pi in the teaching strategies?

Implementing Raspberry Pi in teaching strategies offers several advantages but also presents challenges that educators need to consider. One significant benefit is the facilitation of hands-on learning experiences and the simulation of real-world scenarios, which can enhance student engagement and understanding in a classroom and online (Adams *et al.*, 2021; G. McGrath, 2021; Brodbeck and Hromada, 2022; Fuentes *et al.*, 2022; Chu and Park, 2023; Mallory, Lucas and Arnold, 2023; Phuong, Saied and Yang, 2023; Wei *et al.*, 2023; Xu, 2023; Davidson, Dang and Vasilakos, 2024; Rios *et al.*, 2024). RPi's affordability and versatility make it accessible for various educational purposes, fostering practical skills in programming, embedded systems, IoT technology, robotics, engineering and more (Catalán, Carratalá-Sáez and Iserle, 2021; Ariza and Gil, 2022; Khan, Hadisumarto and Sakamura, 2022; McLauchlan *et al.*, 2022; Powell, Elmesalami and Ibrahim, 2022; Jack and Rowe, 2023; Ma *et al.*, 2023; Mamchur, 2023). Additionally, RPi supports open-source software and has a large community, enabling collaborative learning and resource sharing among students (Chu and Park, 2023). However, there are notable challenges associated with integrating RPi into teaching strategies. A substantial barrier is the technical complexity of setting up and troubleshooting RPi systems, especially for educators and students unfamiliar with hardware and Linux-based environments (Davidson, Dang and Vasilakos, 2024; Rios *et al.*, 2024). Moreover, RPi systems demand ongoing maintenance and support, which may strain resources and expertise within educational institutions. Another concern is the performance limitation of RPi compared to more powerful computing systems, restricting the complexity of projects that can be undertaken (Catalán, Carratalá-Sáez and Iserle, 2021; Mallory, Lucas and Arnold, 2023). In specific contexts, such as teaching HPC (High-Performance Computing) or dealing with large-scale computational tasks, RPi's computing power may not meet the required standards, leading to potential frustrations for students aiming for advanced applications (Powell, Elmesalami and Ibrahim, 2022). Additionally, the need for students to acquire technical knowledge in RPi setup and usage could be a barrier for some learners, impacting the efficiency and effectiveness of the learning process (Mallory, Lucas and Arnold, 2023; Rios *et al.*, 2024). An additional issue that occurred in online education was the restricted influence of educators over students' engagement with lectures, their behavioral dynamics, or the potential disruptions (Brodbeck and Hromada, 2022). Despite these challenges, the benefits of implementing RPi in teaching strategies are substantial, particularly in promoting active learning, fostering creativity, and providing cost-effective solutions for practical education in various STEM disciplines. To address the cons effectively, educators must provide adequate technical support, training, and clear instructional materials to ensure the successful integration of RPi into educational settings and maximize its potential for enhancing student learning experiences (G. McGrath, 2021).

- RQ3: What are the future trends in using Raspberry Pi in education?

Raspberry Pi is increasingly being integrated into educational environments, offering unique opportunities for enhancing learning experiences. Future trends suggest several directions in which Raspberry Pi will play a significant role in education, each with its distinct focus and benefits. One notable trend is the ongoing and anticipated integration of RPi into computing curricula in engineering, computer science, and other fields, which provide students with knowledge and hands-on learning experiences (Ariza and Gil, 2022). Assessing the potential of low-cost microcontrollers and microprocessor devices in various curricular courses and exploring interactive learning environments to enhance processes and support scaling up this technology to create more adaptive curricular alternatives in the future (G. McGrath, 2021). Furthermore, curriculum and learning models should be revised and evaluated to introduce an innovative educational framework (Chu and Park, 2023) and enable new courses more

frequently to a broader range of students (Xu, 2023). RPi's affordability and accessibility make it a valuable tool for hands-on learning experiences, particularly in computer science and engineering courses and exploring the potential of IoT technology. Educators can improve students' practical understanding and application of computing concepts by using Raspberry Pi (RPi) to create more easily accessible learning materials (Davidson, Dang and Vasilakos, 2024). This will enable students to work directly with hardware and software development and enhance their problem-solving, computational thinking, and programming skills (Catalán, Carratalá-Sáez and Iserle, 2021; Ariza, 2022).

Moreover, a significant trend of continuous advancements in RPi's hardware and software capabilities enables more complex computing tasks within educational environments. This progression allows students to explore and experiment with a broader range of applications and platforms for programming (Ma *et al.*, 2023). From basic programming exercises to more sophisticated projects that involve networking, data processing, and interfacing with external devices, RPi's educational potential is expected to expand, providing students with valuable exposure to cutting-edge technologies. The studies indicate a growing interest in leveraging RPi for interdisciplinary projects, particularly in robotics, cloud services (Wei *et al.*, 2023) and Internet of Things (IoT) initiatives (Mallory, Lucas and Arnold, 2023). with practical applications in automation, sensor technology (Khan, Hadisumarto and Sakamura, 2022), and physical computing. This interdisciplinary approach enriches students' learning experiences and prepares them for the increasingly interconnected world of technology. In line with these trends, RPi is positioned to expand its reach into diverse educational domains (Adams *et al.*, 2021). With an emphasis on experiential and project-based learning methods (Powell, Elmesalami, and Ibrahim, 2022), students can apply theoretical concepts in tangible, real-world contexts (Jack and Rowe, 2023). Overall, the future trends in RPi's educational use underscore the technology's transformative impact on pedagogy. By embracing RPi, educators can cultivate a culture of innovation and hands-on learning, equipping students with essential skills and competencies for future careers in technology and beyond. As RPi continues to evolve, its role in education is expected to grow, fostering creativity, collaboration, and critical thinking among learners.

5. CONCLUSIONS

The systematic review provides an in-depth examination of the current utilization of Raspberry Pi in higher education. A comprehensive analysis of 21 studies published between 2021 and 2024 was conducted to present the most recent research findings on the role of Raspberry Pi in augmenting teaching methodologies and influencing the programming language learning process within educational settings. Furthermore, the review explores the advantages and challenges of integrating Raspberry Pi into teaching practices and potential future developments in this area. In educational settings, Raspberry Pi is widely utilized in laboratory environments to facilitate the development of technical and soft skills such as programming skills, project management, verbal and written communication, problem identification and resolution, reading comprehension, autonomy, self-regulation of learning, and teamwork. Moreover, an interdisciplinary educational strategy enables student engagement in developing their programming skills and their ability to combine hardware and software to create real-world systems. Using Python, C++, robot programming language, and parallel and distributed programming (OMP and MPI), students have developed projects such as Raspberry Pi cluster, 3D printing, and Raspberry Pi devices, implementing physical and virtual IoT systems. Literature indicates that physical computer integration can be used to support a wider variety of learning styles and improve classroom instruction. However, a key challenge is teaching complex concepts to students who may have yet to gain prior exposure to this environment.

Additionally, the performance limitations of Raspberry Pi need to be addressed. Moreover, the affordability and accessibility of Raspberry Pi can be enhanced, providing diverse tools for hands-on learning experiences, especially in computer science, engineering courses, and other IT technologies. Future developments will play a pivotal role in the integration of Raspberry Pi into education, particularly through the inclusion of computing curricula in engineering, computer sciences, and related fields. This study had limitations due to its use of the Scopus database only and its focus on journal and peer-reviewed conferences and English-language articles. Despite this limitation, the review provides insights into the implementation of Rpi at the higher education level. As more research is conducted in this field, it will be useful to expand the study better to understand educational trends at this specific educational level.

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THE ROLE OF INTERPERSONAL SKILLS IN EFFECTIVE MANAGEMENT

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ABSTRACT

This study investigates whether interpersonal skills can predict managerial potential, how big of the role do they play in effective management. By examining how these skills affect team dynamics, organizational behavior, and overall business outcomes, the research underscores their importance in management. Utilizing secondary data, the research analyzes scholarly articles related to economics, business, management, and psychology. This paper's objective is to understand the connection between these abilities and effective management, how they influence employee satisfaction and team dynamics, and how they eventually affect the success and performance of organizations. Also, the paper is guided by following questions: How do interpersonal skills influence team dynamics and employee satisfaction within an organization, in what ways do managers' interpersonal skills impact overall organizational behavior and workplace culture, and what is the relationship between the development of these skills in managers and the achievement of strategic business goals and performance outcomes? The findings reveal that, although not the only factor, interpersonal skills significantly affect how a manager is perceived both inside and outside their organization. Interpersonal skills in management positively influence team dynamics and employee satisfaction by fostering open communication, trust, and collaboration. Managers' interpersonal skills significantly impact overall organizational behavior and workplace culture, enhancing employee morale and productivity. There is a strong relationship between the development of interpersonal skills in managers and the achievement of strategic business goals and performance outcomes, as these skills improve leadership effectiveness and organizational cohesion. The study concludes that interpersonal skills are crucial for effective management, as they foster better team dynamics, improve organizational behavior, and lead to the successful achievement of business goals. These skills enhance leadership effectiveness, organizational cohesion, and overall productivity. The results help us better understand how interpersonal skills integrate into effective management and may serve as a foundation for future research in psychology and business.

Keywords: *business, employee satisfaction, interpersonal skill, leadership, management, team dynamics*

1. INTRODUCTION

“Good business leaders create a vision, articulate the vision, passionately own the vision, and relentlessly drive it to completion, but none of this happens without excellent interpersonal skills to bring people along” (Tichy & Charan, 2020). Quotes like this one can really make us think about the importance of interpersonal skills in business word.

That world is often connected with measures of success like money, estates or luxury cars, so we can conclude that when we think of business, we think about something material. What is behind all this material things? Are factors that are influencing your success also material? Often, they are not. People are sometimes so occupied about things that they can see, so most of the times they forget that they own something far more important – their abilities and skills. One of the most important groups of these skills are interpersonal skills or soft skills. Humans use their interpersonal skills to communicate and engage with other people, and these skills are also ones on which we rely when forming relationships with others – either business or private ones (Herrity, 2023). These abilities are critical for managing the complicated dynamics of modern organizational life in addition to being fundamental for developing strong leadership and a pleasant workplace culture. Interpersonal qualities such as building relationships, solving conflicts, employee motivation, and effective communication are essential for successful management (Robles, 2012). Interpersonal skills play a crucial role in management as they enable managers to effectively engage with people, comprehend their needs, and establish a supportive and productive work environment: “About 15 percent of one’s financial success is because one’s technical knowledge and about 85 percent is due to skill in human engineering—to personality and the ability to lead people” (Eliason, 2022). The objective of this paper is to understand the connection between these abilities and effective management, how they influence employee satisfaction and team dynamics, and how they eventually affect the success and performance of organizations. Therefore, aim is to understand the role that interpersonal skills play in effective management, how they affect team dynamics, organizational behavior, and overall business outcomes. This paper's thesis claims that developing managers' interpersonal skills is essential to strengthening organizational behavior, boosting team output, and accomplishing strategic goals. The application of interpersonal skills in management practices will be also one of the topics addressed in this research, which will look at a variety of organizational situations and industries to find general guidelines and tactics. This study will focus only on the interpersonal components of management, while acknowledging the significance of other management talents like technical and decision-making skills.

2. DATA AND METHODOLOGY

2.1. Research Aim, Hypothesis and Questions

This study’s aim is to explore the role that interpersonal skills play in effective management, how they affect team dynamics, organizational behavior, and overall business outcomes. This paper's thesis claims that developing managers' interpersonal skills is essential to strengthening organizational behavior, boosting team output, and accomplishing strategic goals. These questions served as a direction for the research study:

- 1) How do interpersonal skills in management influence team dynamics and employee satisfaction within an organization?
- 2) In what ways do managers' interpersonal skills impact overall organizational behavior and workplace culture?
- 3) What is the connection between the development of these skills in managers and the achievement of strategic business goals and performance outcomes?

2.2. Data collection

For this paper, secondary data was used. Data was mostly collected through RIT online Library, while other were found online, based on the criteria that they are either scholarly or peer-reviewed articles that are related to economics, business, management and psychology fields. For the collection of data in these disciplines, the following search string was used: (*“Interpersonal skills”*) AND (*“Interpersonal skills in business”*) AND (*“Interpersonal skills in effective management”*) AND (*“Implementation of interpersonal skills in management”*).

SOURCE	NAME OF THE ARTICLE	CONCLUSION
Bambacas, M., & Patrickson, M. (2008)	"People-centric skills: Interpersonal and communication skills for financial professionals"	HR managers value interpersonal communication skills.
Dierdorff, E. C., & Rubin, R. S. (2022)	"Revisiting Reciprocity: How Accountability, Proactivity, and Interpersonal Skills Shape Obligations to Reciprocate Citizenship Behavior"	Interpersonal skills enhance organizational citizenship behavior.
Fleming, K. (2016)	"The leader's guide to emotional agility: How to use soft skills to get hard results"	Emotional intelligence boosts leadership effectiveness and team performance.
Goldberg, D. M. (2020)	"People-centric skills: Interpersonal and communication skills for financial professionals"	Soft skills crucial for financial success.
McIntosh, P., Luecke, R., Davis, J. H., & American Management Association. (2008;2014;)	"Interpersonal communication skills in the workplace"	Practice and learning produce strong communicators.
Mencil, J., Wefald, A. J., & van Ittersum, K. W. (2016)	"Transformational leader attributes: interpersonal skills, engagement, and well-being"	Political skills are vital for transformational leadership.
Paul, D., Cadle, J., Thomas, P., & ProQuest (Firm). (2012)	"The human touch: Personal skills for professional success"	Interpersonal skills are crucial in IT careers.
Riggio, R. E., & Tan, S. J. (2014)	"Leader interpersonal and influence skills: The soft skills of leadership"	Soft skills are essential for effective leadership.
Sass, M., & Keil, A. (2022)	"Better conversations every day: 4 core skills that will change the way you lead and live your life"	Effective communication fosters trust and fulfillment.

Table 1: Overview of the articles that were used.

2.3. Literature review

Bambacas and Patrickson' research (2008) examines the abilities in interpersonal communication that HR managers look for in supervisors in order to promote employee loyalty. It highlights the necessary abilities for efficient management communication, such as

collaborative leadership, active listening, and message clarity, through interviews with thirty-two senior HR managers. The results show a disconnect between expected and actual communication abilities, emphasizing the need for more consistent and clearer message to increase employee commitment. The importance of interpersonal communication in fostering organizational attachment and trust is shown by this study. Dierdorff et al.'s (2022) research was the next study examined; it explains the connection between organizational citizenship behavior (OCB) and reciprocity duties, as well as the role that situational and personal traits like accountability and proactive personality play in this relationship. This emphasizes how important interpersonal skills are for enabling effective social interactions and meeting reciprocal responsibilities at work. A novel approach to emotional intelligence for leaders is presented by Kerrie Fleming (2016), who outlines eight essential steps to developing emotional resilience and agility. The significance of authenticity, self-awareness, empathy, controlling one's own emotions as well as those of others, and mindfulness is emphasized in this handbook. It provides leaders with the means to raise their emotional intelligence, which in turn raises their efficacy and boosts team performance. Study is relevant to this paper to describe how can leader use their interpersonal skills to become better managers to their firms. Danny M. Goldberg (2020.), explains how important soft skills in every industry are by focusing on finance sector, which he describes as field often wrongly perceived as one in which only numbers and mathematical skills matter. The book offers a thorough examination of many soft skills, such as active listening, nonverbal communication, leadership, team dynamics, mentoring, dispute resolution, and successful meeting procedures. Book describes people-centric humans as humans ones who emphasize and appreciate their well-being, interpersonal connections, and human interactions in both their personal and professional lives. The path of an internal audit department to become a world-class organization is an engaging fictional story that Goldberg uses to show how these people-centric abilities may have a big impact on an auditor's job performance and career advancement. In McIntosh et al.'s (2008) book we can learn about verbal and nonverbal communication, overcoming barriers, identifying personality types, effective listening, feedback, persuasion, and navigating cultural differences. Book emphasizes that strong communicators are produced by learning and practice. Through hands-on activities and insights into modern communication difficulties, it aims to make individuals proficient communicators by encouraging the application of new approaches at work to become habits. In their study Mencl et al. (2016) are showing how managerial abilities affect transformational leadership, emphasizing the value of political, interpersonal, and workplace engagement in fostering effective and fulfilling leadership. Political skills are describing as skills used to effectively understand others and their needs, and later using this knowledge to behave in the best possible way toward individual or group. Political intelligence is noted as being essential for transformational leadership, and work engagement increases this impact. Organizations are encouraged to develop these talents for strategic advantage and leadership development, as proven by the impact that emotional intelligence has on job satisfaction and leader well-being. The importance of interpersonal skills for career success is emphasized by Paul et al. (2012), particularly in the IT sector. It makes the case that, in today's complicated business situations, interpersonal skills, building connections, and effective communication are just as crucial as technical and business expertise. The book offers advice on honing these crucial abilities on a variety of subjects, such as problem-solving, presentation techniques, negotiation, leadership, and conflict resolution. It tackles the requirement for a comprehensive strategy for personal skills, merging theory with useful advice to improve professional relationships in a range of contexts. Ronald E. Riggio and Sherylle J. Tan (2013) explain crucial soft skills for leaders such persuasion, communication, and emotional intelligence. The book emphasizes the significance of interpersonal skills in leadership and gives a thorough review of their function in successful leadership, backed by research and historical examples.

It highlights how important it is for leaders to comprehend and develop these abilities in order to motivate, influence, and effectively lead those around them. The integration of soft skills into business education is also included in the work, with the goal of preparing upcoming leaders for the demands of leadership. Maggie Sass and Andre Keil (2022) provides helpful advice on how anybody can enhance their communication abilities, resulting in stronger bonds, increased trust, and more personal and professional fulfillment. While ineffective communication increases the likelihood of misunderstandings and strained relationships, effective communication is essential for leadership as it fosters connections, clarity, and collaboration. There is no easy path to improving communication—it takes commitment and effort. Coaching techniques can improve the quality of conversations, increasing productivity and enjoyment in relationships. Study is used to better understand how soft skills can be trained and practiced, and to see why it is important to work on them constantly.

3. ANALYSIS AND DISCUSSION

3.1. Interpersonal skills – within organizations

Interpersonal skills are the glue that keeps teams together and guarantees efficient operations in organizations. The foundation of these abilities is effective communication, which enables employees and managers to express their thoughts, expectations, and criticism in an understandable and helpful manner, without creating tensions or unfair consequences. Another essential interpersonal ability is active listening, which makes sure people truly comprehend the needs and viewpoints of their coworkers and promotes a cooperative and inclusive workplace. Managers are not the only one that need to implement active listening in their routine, employees have the duty to listen to what their manager is saying and based on what they heard behave in two ways – either to follow what the managers had said or to give constructive feedback why they do not agree with what is said (Beenen et al., 2021). These two abilities are so connected that if one is not on the same level as the other, organization could feel big consequences. For example, manager decides to give discount coupons to every customer that spends more than 100 euros on their products. Some employees are actively listening at the team meeting and are immediately starting to implement this strategy, but on the other hand we have group of employees that are not paying attention, so they didn't hear what the manager said because they were distracted. Because some customers got discount coupon and some didn't, we will lose some of our clients and we will feel that as a decrease in sales which than could later be followed by creating the unserious and bad image about company. To add to this, we would have different reactions of managers on mistakes like above mentioned one. These reactions are also connected with interpersonal skills. Empathic, flexible, and emotionally intelligent leaders may inspire and motivate their people, encouraging creativity and productivity, but also make employees feel more comfortable in the workplace ("The Relationship Between Emotional Intelligence," 2014). Image that you have very strict boss who fires all his employees after only one mistake. You would constantly be scared to do something different (that can even be better than what you are doing at the moment) so you will not improve any of your skills because you would just follow his/her rules. On the other side, if the boss is more acceptable of new ideas and has the mindset that everybody can make a mistake and if you are willing to improve it, you will not face any rigorous consequences, you would feel much more comfortable in your position. These leaders are skilled at identifying and utilizing the advantages of their team members, resolving disagreements without any complications, and promoting creation of better bonds between employees, employer and organization, and at the end, employer and his manager. Additionally, interpersonal skills are essential for decision-making and problem-solving in organizational settings (Treadway et al., 2011).

Teams can produce a wide range of ideas, evaluate possibilities more skillfully, and come up with solutions that are widely accepted and easier to implement by fostering polite and open dialogues. Also, importance of developing strong interpersonal skills also lie in the fact that more and more companies are introducing remote or hybrid work, where is much more difficult to establish meaningful relationship between manager and his employees (Priyadarshini, 2022).

3.2. Interpersonal skills – outside of organization

Interpersonal skills are as important outside of the organization, especially when interacting with customers, suppliers, and other external stakeholders. The ability to negotiate and resolve conflicts might mean the difference between securing a deal that benefits the organization and losing out on chances (Martin-Raugh et al., 2020). For example, a disagreement occurs regarding the distribution of resources for an upcoming project during a team meeting. With calmness, the manager steps in and uses her negotiating abilities to hear each team member out. Through the creation of a compromise that effectively tackles key concerns and is in line with the project's objectives, she not only settles the disagreement but also guarantees that the team's combined effort and passion are not diminished ("The Buffering Role of Political Skill," 2020). Interpersonal skills are critical for sales and customer service positions since they have a direct impact on customer loyalty and satisfaction. We can connect this part with example given for the sales in the previous paragraph. Interpersonal skills are also very important in networking. Developing and preserving business relationships can lead to new business opportunities, collaborations, and information sharing. Skilled communicators have the ability to positively represent their companies in external forums, improving their reputation and drawing in talent and resources. Many examples can be found through various talks from professionals on conferences or public speeches.

3.3. Manager's interpersonal skills in the eyes of employers

Strong interpersonal ability managers are seen by employees as capable leaders who cultivate an atmosphere of open communication, respect, and trust (Denney et al., 2020). These leaders are friendly, sympathetic, and adept at recognizing and attending to the needs and worries of their subordinates. They show emotional intelligence, participate in active listening, provide helpful criticism, and help staff members feel heard and appreciated. Their ability to settle disputes amicably improves morale and team cohesion. These leaders are frequently viewed as mentors who support their staff members' career advancement, boosting their sense of fulfillment in their work and loyalty to the company. Managers' interpersonal skills greatly impact employee satisfaction and loyalty to the company, which can be crucially important ("Interpersonal Skills and Emotion Management," 2019). Also, employees value more and look up to the employer that has good self-managing skills, communication, support system, motivation and conflict management (Beenen & Pichler, 2016).

3.4. Practical implementation

The importance of interpersonal skills as a base for efficient management is growing in the business environment of today. Organizations are encouraged to actively develop these abilities at all worker levels in recognition of this. To successfully incorporate interpersonal skills into an organization's culture, a complex approach that includes coaching and mentoring, performance indicators reevaluation, and training and development programs is encouraged (Fulmore et al., 2023). Prioritizing interpersonal skill development through training and development programs is a good idea for organizational learning initiatives. Organizations can greatly improve their employees' capacity to negotiate work relationships by investing in thorough, interactive training sessions that match the complexities of real-world interactions.

Empathy, effective communication, and conflict resolution should be given top priority in these programs so that participants can leave with the skills needed to promote a cooperative and encouraging work environment. These kinds of programs not only get workers ready for the day-to-day difficulties of their jobs, but they also set the stage for success and long-term professional growth. Educating and motivating young people and students to develop their interpersonal skills is also highly recommended (Bedwell et al., 2013). Establishing a strong mentoring and coaching framework is equally important. It is possible to promote both professional and personal growth by matching up young talent with experienced professionals who have excellent people skills. The transmission of soft skills and tacit information, which are frequently challenging to impart through conventional training methods, is facilitated by this hands-on learning approach. Additionally, managers and team leaders who receive focused coaching can receive the customized assistance required to improve their interpersonal skills and become more effective leaders. Adjustment of measurements of performance to include interpersonal skills as a criterion for development and evaluation delivers a powerful statement about the values of the firm. This change promotes a continuous improvement culture in addition to highlighting the value of soft skills in accomplishing corporate goals. Organizations can encourage employees to prioritize and develop these important abilities by identifying and rewarding those who improve in interpersonal communication, conflict resolution, and empathy. The path to developing interpersonal skills within a company is not without difficulties, unfortunately. Individual differences in personality, upbringing, and learning styles call for a flexible and adaptable approach to development and training. In order to address the different needs of their workforce, businesses must be prepared to make long-term investments in resources and support as well as it continuously adapts their strategy.

4. LIMITATIONS AND FUTURE RESEARCH

The study's limitations lie in the fact that interpersonal skills are subjective and can differ widely from person to person. These skills can be used positively, but there are many factors that can impact effective management. So, we can't base our conclusions solely on these skills; we also need to consider other elements that might influence their use and effectiveness in the workplace. Also, even if a manager develops great interpersonal skills, these skills might not align with what their employees, company, or partners need to achieve success. Future research could employ experimental methods to support the theories presented in this paper and identify the crucial skills every manager should develop. The findings of this study can enhance our understanding of the role of interpersonal skills in effective management and serve as a foundation for further exploration of this topic in both business and psychology fields.

5. CONCLUSION

The careful review of interpersonal skills in the context of efficient management highlights an important shift away from traditional, hierarchical leadership theories and toward more collaborative, people-centered strategies. This essay provided insight into the complex role that interpersonal skills play in establishing sound management procedures, improving team relationships, and directing the performance of organizations. The paper shows that the intangible elements of interpersonal abilities have an unbreakable connection to the material performance of businesses. The study answers three key research questions: Interpersonal skills in management positively influence team dynamics and employee satisfaction by fostering open communication, trust, and collaboration. Managers' interpersonal skills significantly impact overall organizational behavior and workplace culture, enhancing employee morale and productivity. There is a strong relationship between the development of interpersonal skills in managers and the achievement of strategic business goals and performance outcomes, as these skills improve leadership effectiveness and organizational cohesion.

Interpersonal skills such as effective communication, empathy, active listening, and conflict resolution are essential for managers to effectively navigate the complex problems of today's work environment. These skills are necessary to identify and address the needs of employees, which improves morale and increases productivity, as well as to establish a positive work environment. The previously mentioned practical implications emphasize how important it is for firms to commit resources to nurturing this talent through targeted training programs, coaching and mentoring relationships, and the revision of measurements of performance. These kinds of initiatives not only show the company's commitment to staff development, but they also establish interpersonal skills as a necessary prerequisite for career advancement. Interpersonal skills will become increasingly important as firms adapt to a linked and dynamic global environment. This is due to the fact that interpersonal skills have been shown to significantly affect corporate success, employee satisfaction, and leadership efficacy. As an essential component of long-term success, human capital needs regular attention and requires commitment, flexibility, and an ongoing process of integrating these skills into company culture.

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KNOWLEDGE TRANSFER THROUGH DIGITAL EDUCATIONAL CONTENTS IN MODERN EDUCATION

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ABSTRACT

The paper examines the influence of digital educational content on various aspects of modern education, with special emphasis on knowledge management, digital competences, as well as the attitudes and experiences of educational staff and parents of students. The paper focuses on the analysis of the implementation of the e-School initiative, which integrates digital tools and resources into the educational process in primary and secondary schools. Knowledge management is a crucial component in the successful transfer of knowledge through digital educational content. In this context, the paper analyzes how digital platforms and tools enable more efficient organization, storage and distribution of knowledge among students and teachers. Digital content not only facilitates access to information, but also encourages interactive learning, which is essential for the development of digital competences. The paper analyzes the perception and experiences of teachers and parents of students who are exposed to digital educational content. The research conducted as part of the e-School project analyzes the impact of digital educational content on the digital competencies, attitudes and experiences of educational staff and parents of students. The results indicate significant progress in digital skills and increased motivation among teachers and students. Digital transformation in education has a positive effect on all participants in the educational process, providing guidelines for the further development of digitally mature schools.

Keywords: CARNET, digital educational content, education, teaching scenarios

1. INTRODUCTION

The three basic terms associated with knowledge management are: data, an information and knowledge. Data is a specific message created by combining signs/symbols in a certain way, while the information is data enriched with relevance and purpose. Information develops into knowledge at the moment when it becomes comprehensible, contextualized, and usable (Šabić, 2023). Knowledge is an integral part of the complex learning processes of all human beings, and such an understanding is important because it emphasizes and connects knowledge with certain cognitive processes, primarily the processes of thinking and learning (Davenport, 1998). Knowledge management is a systematic and integrative process of coordinating knowledge, valuable information and experiences of individuals and a group for the purpose of improving the objectives set within an organization. As regards the knowledge management in the field of education, it is a framework or approach that enables the development of various practices which target gathering and sharing knowledge, and the implementation of activities that ensure the achievement of the set learning outcomes, but also of business activities in general (Barboza et al., 2020: 118-134).

Activities in knowledge management itself are reduced to creating additional value for the entire organization, and the purpose is to generate, release and encourage individual knowledge in the efforts to make it usable and comparable to other organizational resources (Alfirević et al., 2014). The knowledge management model in the context of the educational process includes a total of five processes, i.e. knowledge transfer, storage, application, creation and acquisition of knowledge. In the context of the teaching process, the transfer and acquisition of knowledge imply the direct introduction of information and communication technologies into the teaching process, so as to overcome limitations which include the communication of knowledge that takes place exclusively in the professor-student relationship. Teaching should be enriched with activities such as searching, extracting, interpreting and contextualizing information. Knowledge storage indicates the importance of existing knowledge, that is, knowledge that needs to be preserved and to enable its refreshing and replenishment over time (Šabić, 2023).

2. IMPLEMENTATION OF ICT IN EDUCATION: ROLE OF CARNET AND E-SCHOOLS PROJECT

The Croatian Academic and Research Network - CARNET is a public institution operating within the Ministry of Science and Education in the area of information and communication technology and its application in education (e-Schools - brochure). The CARNET network is a private network of the academic, scientific and research community of the Republic of Croatia, as well as an institution in the primary and secondary education system to which more than 4,300 institutions are connected (Šabić, 2023). The introduction of information and communication technology into the education system was carried out locally, and in 2016, CARNET commenced with the systematic introduction of ICT in schools, launching the program "e-Schools: Complete computerization of school business processes and teaching processes in order to create digitally mature schools for the 21st century", the objective of which is the computerization of the Croatian education system as a whole. The program started with the pilot project "e-Schools: Establishment of a system for the development of digitally mature schools (pilot project)" whose objective was to contribute to strengthening the capacity of the primary and secondary education system, with the aim of training students for the labour market, further education and lifelong learning (<https://pilot.e-skole.hr/hr/e-skole/opis-projekta/>). As of September 2018 until December 2022, the phase II was implemented under the title: "e-Schools: Development of a system of digitally mature schools (Phase II)" which included all schools founded by the Republic of Croatia, local and regional self-government units and religious communities, covering 903 primary schools, 364 secondary schools and 50 art schools and centers for upbringing and education. Apart from the CARNET, as the beneficiary of the project, the project partners were the Agency for Vocational and Adult Education, the Agency for Education, the Faculty of Organization and Informatics, the Nikola Tesla Innovation Center and the National Center for External Evaluation of Education (e-Schools - brochure). 151 primary and secondary schools in the Republic of Croatia participated in the pilot project, which lasted until 2018. Within the pilot project, the general and specific digital competences of teachers were examined/tested, and the teachers estimated that, on average, their competences were between the initial and intermediate levels of development (Scientific research on the effects of the project). The general objective of the e-School program contributes to strengthening the capacity of the primary and secondary education system with the aim of training students for the labor market, further education and lifelong learning, while the specific objectives comprise ensuring a purposeful, reliable and secure ICT environment adapted to the needs of schools in the Republic of Croatia, improving effectiveness and coherence of processes in the educational system, improvement of digital competencies which contribute to the digital maturity of schools and improvement of strategic leadership of schools to increase their digital maturity (<https://www.e-skole.hr/program-e-skole/>).

With the high-quality use of ICT in the classroom, the learning process is focused on the development of critical and logical thinking, imagination and independence, while the learning process itself becomes more creative and less boring and monotonous (Ravshanovna, 2021). Throughout the mentioned project, and in order to integrate ICT into education and to encourage active learning, an innovative and motivating approach to the individual, digital educational content and teaching scenarios were created. Digital educational contents are multimedia and interactive digital contents intended for students for active learning in an innovative, effective, motivating and individually adapted way, but also for teachers who use them in classes (Path towards digital maturity). The contents are intended for use in education, for learning and teaching and encourage active learning in an innovative, effective, motivating and individual-friendly way (Scientific research on the effects of the project). Through the e-School program, a total of 98 digital educational contents have been created for 22 subjects from the 5th grade of elementary school to the 4th grade of gymnasium/high school, and they are based on the curriculum of teaching subjects with an emphasis on the transfer to digital formats of parts of the curriculum in which the advantages of digitization are evident. The second phase of the project covers 60% of the curriculum of an individual subject (Path to digital maturity). Teaching scenarios are materials for teachers in which innovative and imaginative ideas are offered on how to implement teaching activities using modern pedagogical methods with the use of appropriate digital content and tools. The suggestions for teaching activities are not time-limited, but teachers adapt them to their own and their students' capabilities (Path to digital maturity). Teaching scenarios are materials that provide innovative and imaginative ideas for the purposeful application of digital tools and content, as well as modern pedagogical approaches in teaching (Scientific research on project effects). The main objective of the teaching scenario is precisely to put the student in the center of the teaching process and to encourage them to research, to think and to draw conclusions. By using the mentioned educational content, the teacher has the possibility of flexibility, creativity and innovation during the preparation and organization of classes, all in order to meet the needs of the students. Digital educational content enables the application of modern learning and teaching methods, which is aimed at the student and greater autonomy of the teacher in choosing the right method to achieve learning outcomes (<https://pilot.e-skole.hr/hr/rezultati/ikt-u-ucenju-and-teaching/>). In both phases of the e-School project, 1,440 teaching scenarios for teaching subjects and 350 teaching scenarios for cross-curricular topics with 119 associated interactive contents were created, and all created digital educational content and teaching scenarios are available to all users on Edutorij (Path to Digital Maturity). Edutorij, created by Carnet, represents a central place for storing, publishing, sharing, evaluating and retrieving digital educational materials. Edutorij was created as a part of the e-Schools Project, which was implemented to computerize the school system. The Edutorij itself contains educational materials created on other CARNET systems and platforms, as well as those created within the activities of publishing houses. Users are teachers of Croatian primary and secondary schools, but it is also intended for students, employees of universities and public scientific institutes, and all those who have an electronic identity in AAI@EduHr (<https://edutorij.carnet.hr/o-edutoriju>). Currently, Edutorij contains more than 25,000 materials intended for teachers and students, some of which were created during the e-School program, while some were created by teachers. This system made it possible to easily find relevant materials, but also to create teaching materials, to comment and evaluate them (Path to digital maturity).

3. RESEARCH

The research was conducted through the analysis of existing data that was published in the Scientific Research on the Effects of the "e-Schools: Development of a System of Digitally Mature Schools (Phase II)" project, which was prepared by the Department of Psychology,

Center for Applied Psychology of the Faculty of Philosophy in Rijeka, and the head of the research was prof. Ph.D. Svjetlana Kolić-Vehovec. Primarily, two sub-goals of the project were analyzed:

- 1) The effect of the application of the e-School of digital educational content and teaching scenarios on the digital competences, attitudes and experiences of educational workers
- 2) The effect of the application of the e-School of digital educational content (DOS) on the attitudes and experiences of parents of students from primary and secondary schools

The most important participants in the project are covered by the above two goals, namely the educational staff who were educated and implemented activities within the project and the parents of the students who could perceive the child's ICT competences and the use of ICT to fulfill the child's school obligations. The following graphs will show the results related to sub-goal 1, and within the results, the results of the teachers who participated in the pilot project (phase I) and the new teachers involved in phase II were compared.

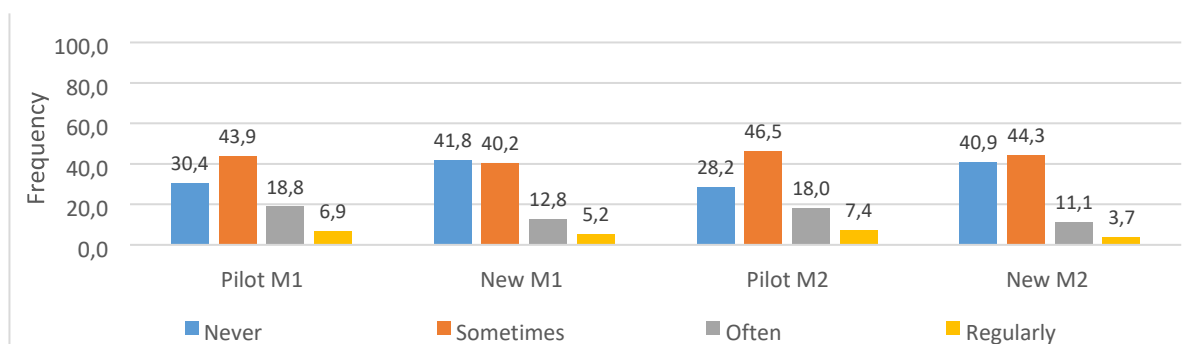


Chart 1: Assessment of the frequency of use of digital educational contents by teachers in pilot and new schools in the initial (M1) and the final (M2) measuring (%)
 (Source: Scientific research of the project effects)

Chart 1 shows that the largest number of teachers, both in pilot schools and in new schools, never or sometimes use digital educational contents, while a smaller percentage often and regularly use them. In pilot schools, about 75% sometimes and never use digital educational contents, while this percentage in new schools is 84%. 25% of teachers in pilot schools use it frequently and regularly, and 16% in new schools. The results show that longer participation in the e-School project had a positive effect on the frequency of using digital educational contents.

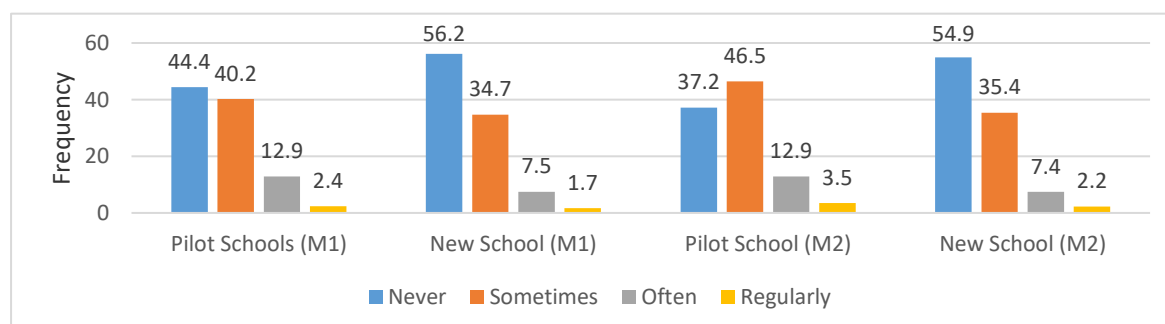


Chart 2. Assessment of the frequency of use of the e-School teaching studies by teachers in pilot and new schools schools in the initial (M1) and the final (M2) measuring (%)
 (Source: Scientific research of the project effects)

It is evident from Chart 2 that teachers use teaching scenarios even less often than digital educational contents. About 84% of teachers never or sometimes use teaching scenarios in pilot schools, and in new schools that percentage is about 91%. The percentage of those who often and regularly use teaching scenarios is about 16% in pilot schools, and about 9% in new schools. The results indicate a positive effect of longer participation in the e-School project on the use of SPs, although teachers rarely use them.

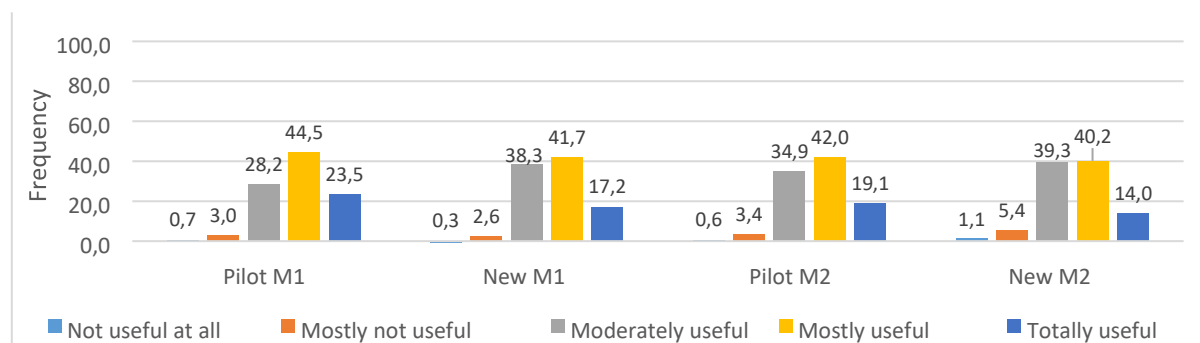


Chart 3. Assessment of the usefulness of e-Schools digital educational contents by teachers in pilot and new schools in the initial (M1) and the final (M2) measuring (%)
 (Source: Scientific research of the project effects)

In the initial measurement, about 68% of teachers who use digital educational contents in pilot schools find them mostly or completely useful, while this percentage in new schools is about 60%. In the final measurement, this percentage for pilot schools is about 61%, and for new schools about 54%. Estimates of the usefulness of digital educational contents are slightly lower in the final than in the initial measurement, and the same may be a consequence of high initial expectations.

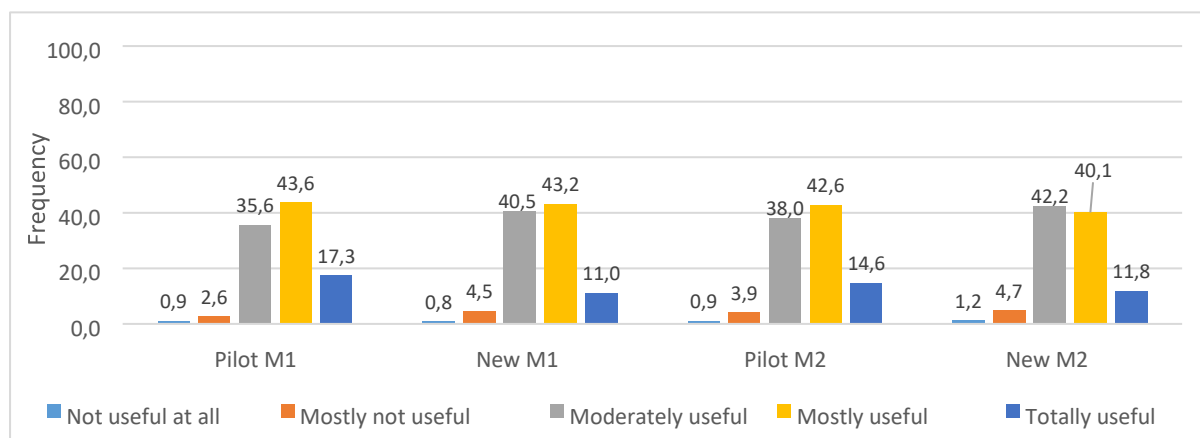


Chart 4. Assessment of the usefulness of e-Schools digital educational contents by teachers in pilot and new schools in the initial (M1) and the final (M2) measuring (%)
 (Source: Scientific research of the project effects)

Chart 4 shows that about 60% of teachers in pilot schools and about 53% of teachers in new schools consider teaching scenarios to be mostly or completely useful, and comparing the end of the project, that percentage decreased slightly, which may be a consequence of teachers considering their application as time-consuming when preparing classes.

The following graphs will show the results of sub-goal 2, where parental experience in the application of digital educational contents in pilot and new schools was examined.

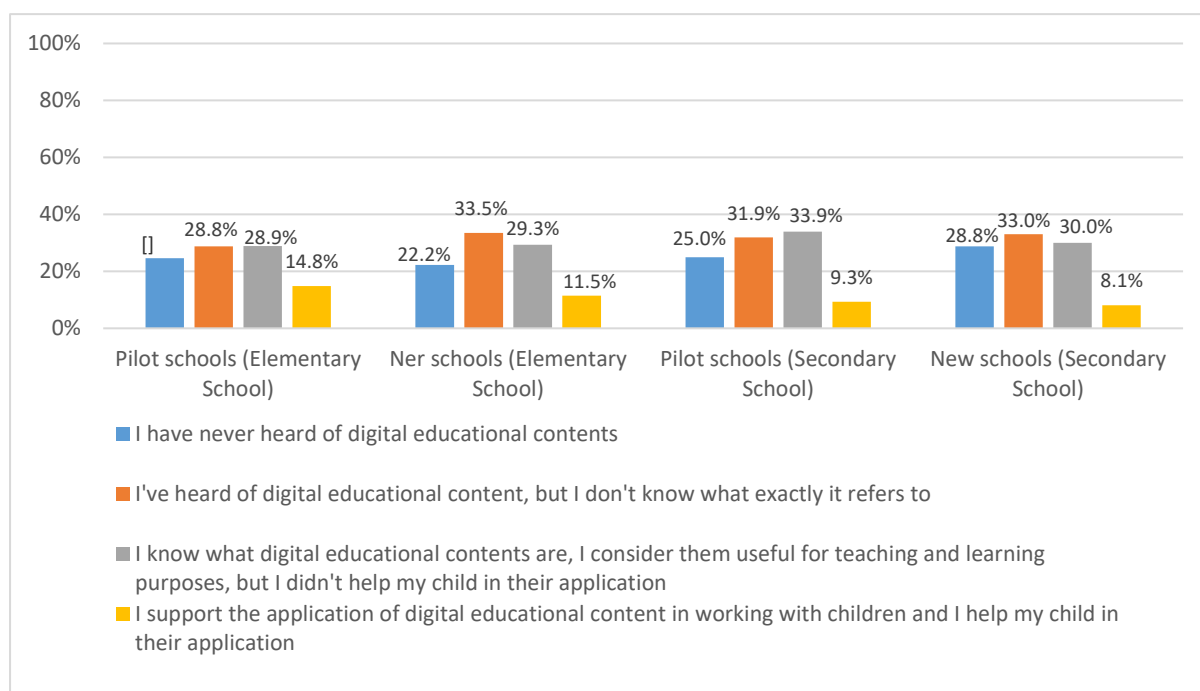


Chart 5. Experience of parents with digital educational contents: data for elementary and secondary schools with regards to the inclusion/involvement in the pilot research (Source: prepared by the author according to Scientific research of the effects)

According to Chart 5, an equal number of parents from pilot and new schools have never heard of digital educational contents (the percentage ranges between 22 and 29%). Also, an equal number of parents have heard of digital educational contents, but do not know what exactly they refer to (the percentage ranges between 29% and 33%) and an equal percentage of those who consider them useful but did not help children in their application (the percentage ranges between 29% and 32%). The percentage of those who support the application of digital educational contents and help children in their application ranges from 8% to 15%, and the highest percentage is those parents who have children in elementary school.

Chart following on the next page

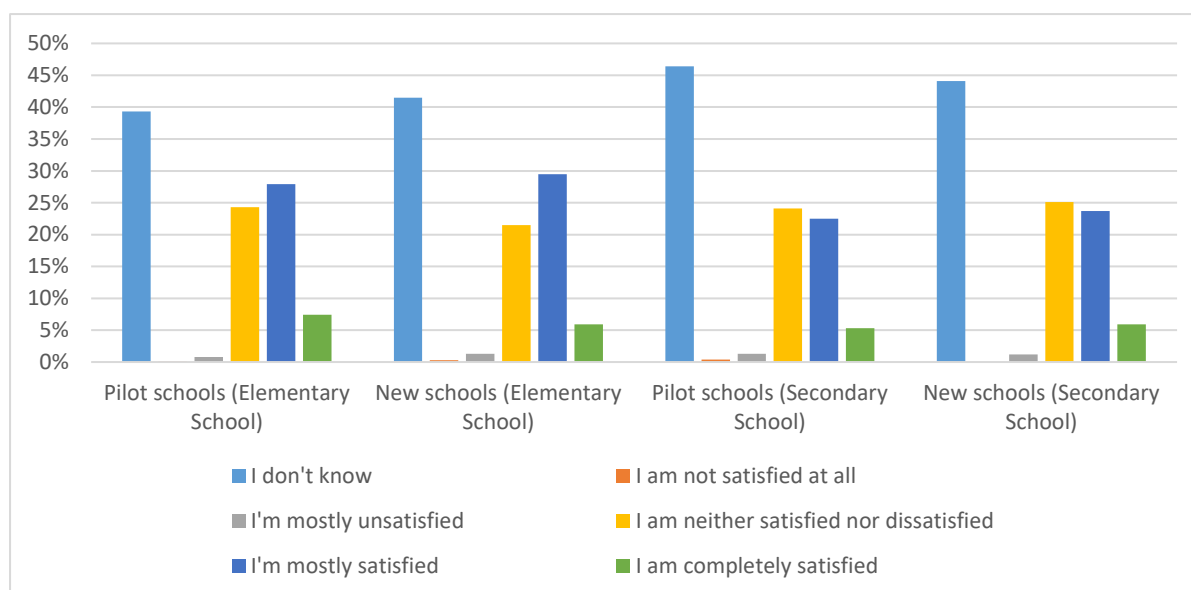


Chart 6. Satisfaction of the parents of students from elementary and high/secondary schools engaged in pilot and new schools with digital educational contents
 (Source: prepared by the author according to Scientific research of the effects)

According to Chart 6, approximately 40% - 50% of the respondents did not express their satisfaction with digital educational contents, because they are not familiar with them, while the percentage of those who are mostly satisfied ranges from 22.5% - 29.5%. In the next part of the thesis, indicators will be analyzed - measurable outcomes and quality assurance, all according to available data from CARNET. The e-School project, led by CARNET, is aimed at improving the digital maturity of schools and ensuring quality education through digital transformation. Analysis of data on measurable outcomes from 2020 to 2023 provides insight into progress and challenges in the implementation of this project.

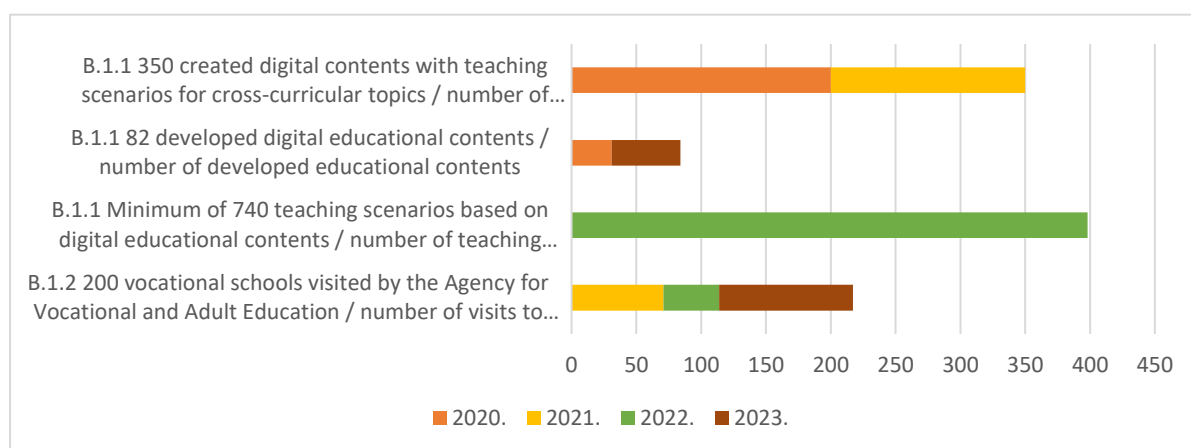
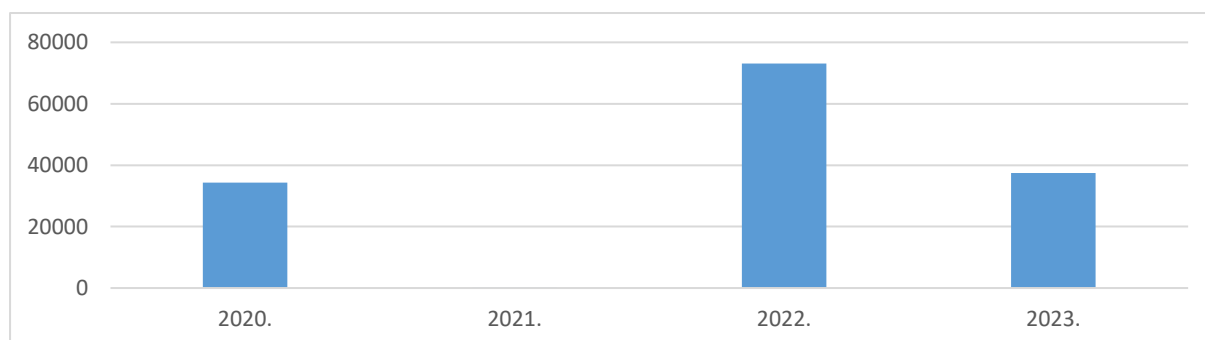


Chart 7. Indicators – measurable outcomes
 (Source: prepared by the author according to CARNET's data lake)

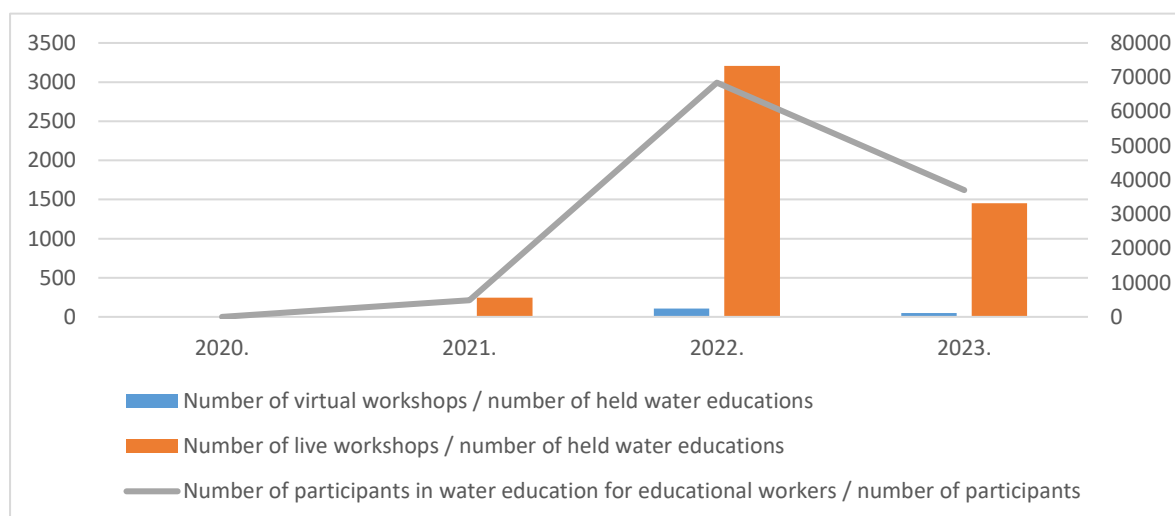
The initial success in 2020 and 2021 in the creation of digital content shows a good starting position of the e-School project. In 2022 and 2023, there is a significant increase in activities in the development of digital educational content, which suggests adjustments in the project strategy and additional initiatives. The development of teaching scenarios based on digital educational contents in 2022 shows the successful completion of a specific phase of the project.

The lack of activity in other years indicates a focus on other components and the completion of that part of the project. The continuous increase in the number of visits to vocational schools by ASOO (Agency for Vocational Education and Adult Education) emphasizes the commitment to the project in improving vocational education. It is particularly important to stress the highest number of visits in 2023, which is the result of increased efforts to integrate digital technologies into vocational education and strengthening cooperation with ASOO. Fluctuation in the participation of school employees in professional development indicates different phases of project implementation. The high participation in 2020 and 2022 is the result of intensive programs, while the low number in 2021 may be related to the COVID-19 pandemic and restrictions that affected professional development opportunities.



*Chart 8. Number of employees who took part in professional development
 (Source: prepared by the author according to CARNET's data lake)*

The data show the dynamic environment in which the e-School project was implemented, with different successes and challenges each year. Variations in results are the result of strategic changes, specific projects and external factors such as the pandemic. Continuous efforts in visits to vocational schools and an increase in the development of digital educational content in 2023 indicate a positive direction and adaptability of the project. Data on quality assurance indicators in the context of CARNET e-Schools project show dynamic changes and adjustments in the educational environment from 2020 to 2023. Virtual workshops reached their peak in 2022, which is associated with the pandemic and the transition to online formats, while the decrease in 2023 indicates a return to classic forms of education.



*Chart 9. Number of workshops and participants
 (Source: prepared by the author according to CARNET's data lake)*

Live workshops show an increase in 2021 and 2022, as a result of reopening and the need for physical presence after the pandemic, while a decrease in 2023 indicates an optimization of the number of workshops or a transition to hybrid models. Attendees of guided education for teaching / educational staff increased significantly in 2022, indicating specific campaigns and an increased need for training, while the decrease in 2023 indicates saturation and the completion of specific programs.

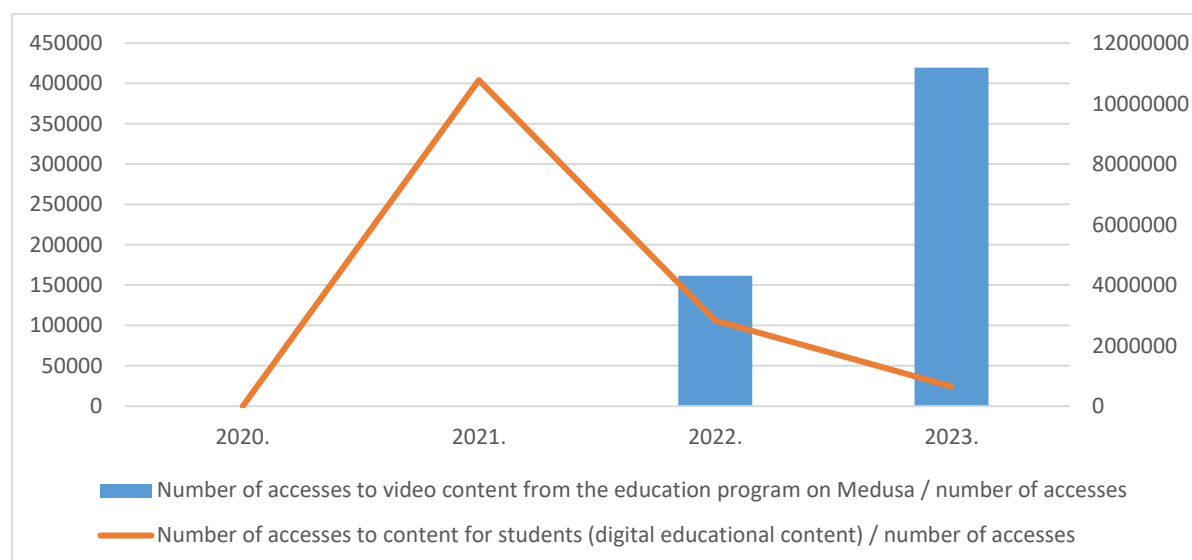


Chart 10. Number of accesses to digital contents
 (Source: prepared by the author according to CARNET's data lake)

Access to video content on Medusa shows a successful introduction in 2022 and growing popularity in 2023, suggesting increased adoption of digital educational contents. Access to these contents reached its peak in 2021, which may closely relate to the pandemic and the massive shift to online education. The decline in the following years indicates stabilization and adjustment to new conditions. These data indicate the flexibility and adaptability of the e-Schools project in dealing with challenges and changes in the educational environment. The project demonstrated the ability to quickly adapt to the user needs and provide quality education through various formats and platforms.

4. CONCLUSION

Knowledge management is a crucial factor in achieving the success of educational organizations through the integration of information and communication technologies (ICT). The e-School project, under the leadership of the Croatian Academic and Research Network (CARNET), represents a significant step in the digitalisation of the Croatian education system. Through two phases of the project, including a pilot phase and general implementation, the objective was to create digitally mature schools. The results show that longer participation in the project had a positive effect on the frequency of use of digital educational contents and teaching scenarios among teachers, regardless of the fact that they used these tools to a limited extent. Despite challenges such as the COVID-19 pandemic, the project demonstrated flexibility and adaptability, confirming the importance of digital competences and modern pedagogical approaches. Data on measurable outcomes show progress in the development of digital content and teaching scenarios, and a continuous increase in visits to vocational schools, which indicates the strengthening of capacity and cooperation within the education system. The number of workshops and access to digital content also indicates successful integration of digital resources and methodical adaptation of educators.

The e-School project itself is an example of a successful digital transformation of the educational system, highlighting the importance of systematic knowledge management and continuous education of all participants in the process. Digital educational content and teaching scenarios enable innovative and motivating learning, adapted to the needs of students and teachers, and contribute to the quality and efficiency of the education system in Croatia.

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THE INFLUENCE OF BUSINESS INTELLIGENCE ON THE QUALITY OF BUSINESS DECISION-MAKING

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ABSTRACT

The very changes in market conditions create the need to make safer and better decisions, decisions based on concrete facts. Otherwise, time, financial resources, and competitive position are lost. To avoid all of the above, it is necessary to make decisions based on the exact facts provided by business intelligence. By its application in the decision-making process, it provides an action element through the results of better information and the creation of a better strategy. Business intelligence tools that support and confirm the decisions made are becoming necessary at every level of decision-making, offering the highest quality information that drives smart decisions in a turbulent business ecosystem. The effect of surprise and unpredictability brought by the business future is canceled by business intelligence that provides visible and real information that drives smart decisions. What is the real influence of business intelligence on business decision-making in a qualitative sense, both in terms of tools and in terms of the extent of their implementation, is set as the goal of the work, which is empirically confirmed. For the purposes of proving the set goal, a survey was conducted on a sample of 69 decision makers of medium and large Croatian business entities, using a survey questionnaire, while the results of the conducted survey were analyzed in the SPSS software package. The results of the same research show that business decision-makers are oriented towards business intelligence in the business decision-making process, confirming its general positive influence on the quality of decision-making, as well as confirming the compatibility of the scope of business intelligence implementation and the quality of business decision-making. The general success factors of business intelligence have a stronger influence on the perception of the impact of business intelligence on the quality of business decision-making than the actual scope of business intelligence implementation.

Keywords: *Business decision-making, Business information, Business intelligence*

1. INTRODUCTION

Having confidence in the decision made and the results thereof in safe conditions does not represent any problem, while confidence decreases in less safe and uncontrolled conditions. On the basis of the above, decision-makers find solutions that ensure safety and eliminate risk and uncertainty in the successful implementation of the decision made, in an ever-growing competitive market. The solution is hidden in the quality of the information used, as the basic action element of every decision-making process. Finding such information and using it for business purposes requires a tool that will recognize the objectivity, truthfulness, accuracy, clarity, completeness, timeliness, security, and protection of the information and use it as the most useful, high-quality, and effective business information. Business intelligence is a tool that offers the former. It continuously and systematically collects, verifies, and analyzes information, as a relatively new form of safe management and as an effective tool for making better decisions. Business intelligence is a concept and method that facilitates business decision-making but also improves the quality of the same process. It finds the highest quality data and transforms it into the highest quality information that becomes knowledge with an action element in accurate and quality business decisions. The action element is reflected in the predictability of future processes, events, and actions, creating new values.

How business intelligence affects the quality of business decision-making in general and in terms of the scope of its implementation is set as the goal of the research. Based on the same goal, two hypotheses are established which assume and confirm the connection between the quality of business decision-making and business intelligence used through data mining techniques, OLAP tools, and visualization tools as the level of technical functionality achieved and through the extent of its implementation at the level of processes, departments or the entire business entity.

2. A THEORETICAL FRAMEWORK OF BUSINESS INTELLIGENCE AND BUSINESS DECISION-MAKING

The business world observed decision-making with special attention in the middle of the twentieth century when the way in which those who make decisions reflected on their work changed and thus caused a new urgency of action, placing the decision in the context of the end of deliberation and the beginning of an action (Buchanna and O'Connell, 2006). The 20th century modernized management, especially in the direction of thinking about the adoption of technology as a decision support (Amrozi et al., 2020). Increasingly pronounced changes, enormous amounts of data, and lack of time are the factors that have prompted the necessity of merging decision-making and information systems. It is difficult to determine the consequences of any decision, which raises the question of how the consequences of the decisions made and implemented are not so easily predictable (Certo and Certo, 2011). Safety is increased in predictability by fact-based decision-making offered by the business intelligence concept. The development of business decision-making is aimed towards the creation of safe and successful decision-making, decision-making with only positive results, minimal errors, and unwanted situations, leaving room for experimentation in the formation of correct decisions (Jurić, 2023). Data and information are the basis of the decision-making process (Čavalić, 2016). Information has become the most important management resource (Bazdan, 2009), the basis for better decision-making, forecasting, better results, and greater security (Javorović and Bilandžić, 2007). Making decisions is a human endeavor (Adam and Dempsey, 2020). The same undertaking, by its very nature, is a decision-making process with a high level of complexity and uncertainty, particularly at the strategic level of decision-making (Sikavica et al., 2008). In the context of the above, decision-makers at all levels of management are required to make high-quality decisions based on information as data enriched with a certain amount of business content and meaning (Liautaud and Hammond, 2006), which is offered by business intelligence as a skill, process, technology, and support for the business decision-making process (Davenport, 2010) and as a new culture of information work (Olszak, 2014). Business intelligence provides knowledge for the needs of making better and more effective business decisions at all management levels (Luetić, 2017), increases sales, reduces costs, increases revenues (Ćorić Bojčić, 2020), offers a rational component in decision-making through data and the knowledge necessary for processing and interpreting the same data when making business decisions (Dukić et al., 2016). Data mining, OLAP tools, and dashboards are just some of the business intelligence tools that support and confirm managerial decisions (Isik et al., 2013), provide data from the past, and offer options for the foreseeable future (Ranjan, 2009). Business intelligence offers knowledge about information as the most important non-traditional economic resource (Jurić, 2020), offers efficiency in information management through a set of methodologies, processes, and technologies, turning raw data into valuable information for better strategic, tactical, and operational business decisions (Haupt et al., 2015). Business intelligence, based on which business decisions are made, is a managerial resource long recognized in the economies of developed countries (Bilandžić et al., 2012). According to the research of the previous authors from 2012, out of 233 Croatian business entities, 57% of them applied some business intelligence activities, 19% of them had a business intelligence

department, while 24% did not apply business intelligence activities at all. In the continuation of the research, in 2017, on a sample of 74 business entities, it was established that nothing has changed regarding the institutionalization of the business intelligence system, although the number of business entities with a formed business intelligence department has increased, as well as the number of those who have started to apply some of business intelligence activities (Bilandžić and Lucić, 2018). Business intelligence improves and rationalizes business decision-making and influences more efficient operations, which was proven by a sample of 113 Croatian business entities in a survey conducted in 2016 (Dukić et al., 2016). It is also possible to observe business intelligence in synergy with other concepts in the context of better decision-making. Research conducted in 2023 on a sample of 69 medium-sized and large Croatian business entities points to a possible connection between intuition and business intelligence as two concepts that, in an integrated way, represent the key to correct business decision-making (Jurić, 2023). Regarding the theoretical assumptions of business intelligence and business decision-making, it is clear that the concept of business intelligence can be viewed as the key to better business decision-making, while the practical confirmation of the same is presented in the continuation of the paper.

3. METHODOLOGICAL FRAMEWORK AND RESEARCH RESULTS

The survey questionnaire was the instrument for data collection. The same was sent to the e-mail addresses of medium and large Croatian business entities. The obtained results were analyzed in the SPSS software package through descriptive statistics, t-test, multiple linear regression model analysis, and analysis of variance (ANOVA). The subject of the research is the determination of the degree of influence of business intelligence and its extent of implementation on the quality of decision-making. The goal is to confirm the connection between business intelligence and business decision-making in their necessity, correctness, and security. On the basis of the above, two working hypotheses were set: H1. Business intelligence positively affects the quality of business decision-making and H2. The scope of implementation of business intelligence positively affects the quality of business decision-making.

3.1. Research results

52 medium-sized and 17 large business entities participated in the survey. The most represented were business entities in the tourism and hospitality industry, 25 of them, 11 each from the banking sector and trade, 7 from the IT sector, 5 from production, 3 from construction, 2 from healthcare, 2 from the service sector, while 3 business entities did not statement on the type of business activity. The survey questionnaires were filled out by 11 representatives of the management and supervisory board, 19 sector directors, 31 service directors, and 8 department heads. Men predominate in the research with 67% of the sample, while the most represented respondents were in the age group of 31 to 40 years. The classic Likert scale, with five levels of intensity, was used to evaluate the respondents' opinions on the characteristics of the general connection between business intelligence and business decision-making, as well as satisfaction with the scope of implementation of business intelligence and its impact on the quality of business decision-making.

3.1.1. General characteristics of the connection between business intelligence and business decision-making in surveyed business entities

The survey questionnaire first sought to determine the state of business decision-making in the surveyed business entities, as well as the potential influence of business intelligence on the quality of decision-making. For this purpose, seven statements were chosen, which refer to:

- The availability of information provided by business intelligence to the decision-making process

- The speed of providing information by business intelligence to the decision-making process
- Reduction of decision-making time, due to the use of business intelligence
- Reducing the costs of the decision process, due to the use of business intelligence
- Connection of the decision-making process, supported by business intelligence, and the competitive advantages of the business entity
- The connection between decision-making, supported by business intelligence, and the financial result of a business entity
- The influence of business intelligence on the solution of complex problems

The following table shows the respondents' opinions on the previously mentioned characteristics of business decision-making and its connection with business intelligence, with the use of a classic Likert scale, with five levels of agreement (from "completely disagree", which is evaluated with a score of 1; through "mostly do not agree" – grade 2; "neither agree nor disagree" – grade 3; "mainly agree" – grade 4, up to "completely agree" – grade 5).

Features	N	Min	Max	Mean value	Standard deviation
The availability of information provided by business intelligence to the decision-making process	69	2	5	4,23	0,770
The speed of providing information by business intelligence to the decision-making process	69	2	5	4,17	0,785
Reduction of decision-making time, due to the use of business intelligence	69	2	5	4,26	0,779
Reducing the costs of the decision process, due to the use of business intelligence	69	2	5	4,20	0,739
Connection of the decision-making process, supported by business intelligence, and the competitive advantages of the business entity	69	2	5	4,26	0,741
The connection between decision-making, supported by business intelligence, and the financial result of a business entity	69	2	5	4,17	0,747
The influence of business intelligence on the solution of complex problems	69	2	5	4,20	0,833

*Table 1. Basic characteristics of business decision-making and the impact of business intelligence on business decision-making
 (Source: Made by the author)*

As can be seen from the data presented, the mean values of the observed statements indicate a high influence of business intelligence on the decision-making process in the observed medium and large business entities. All seven statements, which talk about the potential connection between business decision-making and business intelligence, have values from 4,17 to 4,26, on a scale with grades from 1 to 5. The greatest perceived influence of business intelligence on decision-making can be seen in the speed of decision-making, and in ensuring the competitive advantage of the business entity – in both cases, with an average score of 4,26.

3.1.2. General characteristics of the use of business intelligence and its effect in surveyed business entities

In the following, we wanted to determine how business intelligence was used in the surveyed business entities, whereby it was first established that the respondents, on a standard Likert scale with five levels of agreement, value the level of use of the data mining functionality of business intelligence with a mean score of 3,94 (with a standard deviation of 0,922), the level of use of OLAP tools for interactive database queries with a score of 4 (with a standard deviation

of 0,985) and the level of use of managerial visualizations (dashboards) with a mean score of 4 (with a standard deviation of 0,985). The above can be commented on as a mediocre to successful level of the achieved technical functionalities, in addition to which it was necessary to determine what general business benefits they provide to the surveyed business entities.

The assessment on the same day is in the following table, where the following indicators were used:

- The success of using data and information from external sources
- The successful use of data and information from internal sources
- Integration and success of the use of overall business data and information
- Flexibility of work and work processes due to the use of business intelligence
- Automated reporting according to the needs of the users of business data and information

The table below shows the results of the research, which speak of the high level of agreement of respondents with the statements related to the indicated indicators, measured on a Likert scale with 5 levels of agreement. The lowest level of agreement (4,09) was obtained for the evaluation of integration and the overall success of the use of business data and information, while the highest score (4,23) was obtained for the effectiveness of the use of internal business data and information.

Features	N	Min	Max	Mean value	Standard deviation
The success of using data and information from external sources	69	2	5	4,19	0,809
The successful use of data and information from internal sources	69	2	5	4,23	0,860
Integration and success of the use of overall business data and information	69	1	5	4,04	0,946
Flexibility of work and work processes due to the use of business intelligence	69	2	5	4,19	0,772
Automated reporting according to the needs of the users of business data and information	69	2	5	4,10	0,843

*Table 2. Basic characteristics of the use of business intelligence and its effect
 (Source: Made by the author)*

3.1.3. Evaluation of the connection between business intelligence and business decision-making in the observed business entities

Considering that the seven statements, previously shown in Table 1, were used to evaluate the perceived connection between business intelligence and decision-making, the above indicators were first aggregated into a single indicator, which was obtained as the mean value them. Its mean value is 4,21 (with a standard deviation of 0,65). Furthermore, to formally confirm that the assumed influence is the result of the systematic effect of business intelligence on business decision-making, and not the result of a statistical error, a one-sided t-test was performed, which tested whether the value of the observed indicator was significantly different from the value of 2,5, which represents the neutral point of the used five-point measurement scale, in which there is neither a positive nor a negative perceived connection between the application of business intelligence and business decision-making. The results of the obtained statistical analysis (in Table 3) show that, with significance at the level of 0,01, it can be said that the mean value of the observed distribution differs from the neutral point of the used measurement scale (with a value of 2,5).

Index of the perceived impact of business intelligence on business decision-making	Tested value = 2,5					
	t	df	Sig. (2-page)	Difference of means	95% confidence interval of the difference	
					Lower level	Upper level
	21,909	68	0,000	1,71532	1,5591	1,8715

Table 3. Statistical test of the perception of the influence of business intelligence on business decision-making
 (Source: Made by the author)

Following the conducted analysis, it can be said that the working hypothesis H1 is accepted, which reads: H1. Business intelligence has a positive effect on the quality of business decision-making.

3.1.4. The scope of implementation of business intelligence and its effect on the analyzed business entities

The respondents first expressed their opinion on the issue of the extent of business intelligence implementation, with 43% implementation at the process level, 39% implementation at the department level, and 18% implementation at the level of the entire business entity.

To find out about the effect of the extent of the implementation of business intelligence, nine statements were included in the questionnaire, which related to:

- The quality of choice of the established level of implementation of business intelligence (mean value 4,13 with standard deviation 0,784)
- Perceived connection of defined implementation of business intelligence with accuracy and timeliness of information (mean value 4,13 with standard deviation 0,765)
- The impact of the defined scope of business intelligence implementation on the creation and undertaking of business actions (mean value 4,10 with a standard deviation of 0,860)
- The impact of the defined scope of implementation of business intelligence and the degree of systematicity in business (mean value 4,06 with standard deviation 0,838)
- The relationship between the defined scope of implementation of business intelligence and inter-functional cooperation (mean value 4,13 with standard deviation 0,839)
- The relationship between the defined extent of implementation of business intelligence and the speed of business decision-making (mean value 4,25 with standard deviation 0,736)
- Ability to define the scope of implementation of business intelligence to improve identification of business opportunities and threats (mean value 4,30 with standard deviation 0,810)
- Ability to define the scope of implementation of business intelligence to improve forecasting and risk management (mean value 4,32 with standard deviation 0,813)
- The relationship between costs and benefits, resulting from the defined scope of business intelligence implementation (mean value 4,32 with standard deviation 0,849)

According to the ratings of the determinants of the effect of the implementation of business intelligence, which speaks about the respondents' perception of the positive outcomes of it, given that the mean ratings, given on a scale of 1 to 5, range from a minimum value of 4,06 to a maximum value of 4,32, the lowest is the impact of the implementation of business intelligence on the systematicity of business (4,06 with a standard deviation of 0,838), and the greatest on forecasting and risk management (4,32 with a standard deviation of 0,813), as well as on the relationship between perceived costs and benefits (4,32 with standard deviation

0,849). The overall effect of the scope of business intelligence implementation was evaluated by aggregating the aforementioned indicators into a single indicator, which was obtained as the mean value of them. The value of this aggregate indicator is 4,19 (with a standard deviation of 0,66), and it will also be used in the analysis of the second working hypothesis.

3.1.5. Assessment of the connection between the scope of implementation of business intelligence and business decision-making in the observed business entities

To determine whether there is a statistically significant connection between the scope of business intelligence implementation and business decision-making, first a linear correlation analysis will be performed between the indicators of the effect of business intelligence implementation and the already mentioned indicator, which indicates the perceived impact of business intelligence on business decision-making. The analysis was carried out using the standard Pearson linear correlation coefficient, which indicates that there is a positive and strong (with a value of 0,812) and statistically significant (at 0,01%) linear connection between the observed indicators, which preliminarily indicates the acceptability of the working hypothesis H2, which reads: H2. The scope of implementation of business intelligence has a positive effect on the quality of business decision-making. Given that some other perceived positive impacts of business intelligence, which go beyond the domain of its implementation, could affect the assumed relationship, the following will test the effect of selected indicators of the effect of business intelligence in the observed business entities, previously shown in Table 2. This was created for the purpose and an aggregate indicator of the effect of business intelligence outside the domain of implementation, which was obtained as the mean value of the statements listed in Table 2. Its mean value is 4,15 (with a standard deviation of 0,72), which indicates a high perceived effect of business intelligence intelligence in the general sense. To carry out the previously described analysis, a multiple linear regression model will be used, whereby aggregate measures of the general effect of business intelligence and the effect of the scope of business intelligence implementation will be used as independent variables. As a dependent variable, the perceived influence of business intelligence on business decision-making will be used. In this way, it will be established whether there is a cause-and-effect relationship between the mentioned variables, as well as to what extent the connection between business decision-making and business intelligence contributes to its general effect, and to what extent its scope of implementation. The results of the analysis are presented in the following table, from which it is evident that the model is significant at the 1% level (Sig. < 0,01). The obtained linear regression coefficients are also significant – for the aggregate measure of the effect of the scope of implementation at the level of 5%, and the evaluation of the general effect – at the level of 1%. The predictive power of the model is high, with 74,6% of the total variance explained.

Summary of regression model analysis				
Model	R	R ²	Customized R ²	Stand. estimation error
1	0,864 ^a	0,746	0,738	0,33291
Independent variables: (Constant), Business Intelligence General Performance Score, Business Intelligence Implementation Scope Performance Index				

Table 4. Results of the analysis of the multiple linear regression model
 (Source: Made by the author)

Table following on the next page

ANOVA (analysis of variance) ^a						
Model		Sum of squares	df	Mean value	F	Sig.
1	Regression	21,445	2	10,723	96,748	0,000 ^b
	Residual	7,315	66	0,111		
	In total	28,760	68			
Dependent variable: Index of the perceived influence of business intelligence on business decision-making						
b. Independent variables: (Constant), Assessment of the general effect of business intelligence, Index of the effect of the implementation of business intelligence						

Table 5. Analysis of variance (ANOVA)
 (Source: Made by the author)

Analysis of regression coefficients ^a						
Model		Unstandardized coefficients		Standardized coefficient	t	Sig.
		B	Stand. error	B		
1	(Constant)	0,786	0,259		3,032	0,003
	Performance Index of Business Intelligence Implementation Scope	0,299	0,122	0,305	2,453	0,017
	Assessment of the general performance of business intelligence	0,524	0,111	0,586	4,713	0,000
Dependent variable: Index of the perceived influence of business intelligence on business decision-making						

Table 6. Analysis of regression coefficients
 (Source: Made by the author)

About the standard interpretation of the multiple linear regression coefficients, it is easy to conclude that, for an increase in the impact index of the extent of business intelligence implementation by one unit, with an unchanged assessment of the general effect, the index of perceived influence on business decision-making increases by 0,299 units. At the same time, if the effect of the scope of implementation is kept constant, an increase in the general effect of business intelligence by one unit will increase the index of perceived influence on business decision-making by 0,524 units. In this sense, it can be concluded that the general success factors of business intelligence have a greater effect on the perception of the impact of business intelligence on business decision-making than the scope of implementation of business intelligence. However, the effect of the extent of implementation is positive and statistically significant, which is why the working hypothesis H2 is accepted.

4. CONCLUSION

For the survival of business entities in today's changing conditions, it is necessary to be more intelligent and to look for simple, quick, and smart decisions. In the immediacy of all these changes, instabilities, and unpredictability of the business ecosystem, success is hidden in every piece of knowledge derived from the highest quality information. Decisions made based on quality information reduce both the effect of surprise and the risk in their outcomes. Through a quality business decision, every used quality information becomes knowledge that creates added value. Defined conversion is provided by business intelligence based on the assumption that business entities possess huge amounts of data and information, they just need to be able to retrieve, analyze, and present them in a decision that is more likely to offer outcomes of a more predictable future. Business intelligence offers business decision-making the highest quality information, and quickly available information, offers time and cost savings in making business decisions, offers results with enhanced competitive advantage, better financial results,

and the best solutions to complex problems. To find out the impact of business intelligence on the quality of business decision-making, research on a sample of 69 business decision-makers from 52 medium-sized and 17 large business entities first determined the state of business decision-making and the potential impact of business intelligence on business decision-making, then determined the method of use and the general benefit of business intelligence to the surveyed business entities, to evaluate the perceived connection between business intelligence and business decision-making. To find out about the effect of the scope of implementation of business intelligence, nine determinants were analyzed, whose performance evaluations revealed respondents' perceptions of the positive outcomes of it, and to determine the statistical connection between the scope of implementation of business intelligence and business decision-making, a linear correlation analysis was used, whereby the positivity of the statistical confirmed the relationship between the observed variables. In the context of the conducted analysis, it was concluded that the general effect of the success of business intelligence was evaluated with a greater effect on the perception of the influence of business intelligence on the quality of business decision-making than the extent of the implementation of business intelligence. Based on the conducted research, it was concluded that Croatian business entities are familiar with business intelligence and that they use it in the process of business decision-making and that with it they create quality business decisions that result in a competitive advantage and better financial results. The same research aimed to point out the importance of applying business intelligence and its exceptional positive impact on the quality of business decision-making through several expressive effects. The conducted research confirms the necessity of applying business intelligence in business decision-making processes at all decision-making levels and all sizes of business entities.

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WORKPLACE MOTIVATION ACROSS X, Y, AND Z GENERATIONS: AN ORGANIZATIONAL BEHAVIOR PERSPECTIVE

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ABSTRACT

This research paper explores workplace motivation across Generation X, Generation Y (Millennials), and Generation Z, focusing on the differences in intrinsic and extrinsic motivation factors. It identifies the research gap in understanding generations' preferred leadership and management philosophies, as well as their subtle differences in motivational factors. In addition, this paper will discuss technological adaptation, generational changes in culture, and preferred leadership and management styles. Understanding such differences in generations is crucial for improving workplace productivity and achieving maximum employee satisfaction which are all factors building a successful organizational culture. This paper investigates three key research questions; How do intrinsic and extrinsic motivation factors differ between Generation X, Generation Y (Millennials), and Generation Z in the workplace? What role does technological adaptation play in workplace motivation across different generations? How do the preferred leadership and management styles differ among Generation X, Generation Y, and Generation Z in relation to their motivation and job satisfaction? Through literature review, this study examines current research and theories, such as the Generational Cohort Theory and Maslow's Hierarchy of Needs, to offer a thorough understanding of the differences between generations in workplace motivation. Key findings indicate that there are considerable generational differences in attitudes towards work and motivation. Generation X respects independence and self-governance and has faith in leadership and organizational objectives. While Generation Z places a higher priority on well-being, mental health, and financial stability, Generation Y places more emphasis on work-life balance, transparency, and collaboration. These results advance research by highlighting the need for individualized approaches to motivation. The practical consequences suggest that to satisfy the varied demands of their generational workforce, organizations should modify their communication styles and motivation tactics. Creating a welcoming and inclusive workplace can increase satisfaction among workers.

Keywords: generational differences, workplace motivation, intrinsic and extrinsic motivation, leadership and management styles, technological adaptation

1. INTRODUCTION

Understanding and controlling organizational behavior in a workplace plays a fundamental role in increasing job satisfaction, employee productivity, and obtaining the overall motivation and efficiency of the workplace. Understanding workplace motivation is crucial to the overall functionality and success of a company. As defined in *Organizational Behavior* by Stephen P. Robbins and Timothy A. Judge, the processes that explain a person's level, course, and perseverance of effort regarding achieving a goal are referred to as motivation. Abraham Maslow's hierarchy of needs (Physiological, Safety, Social, Self-esteem, and Self-Actualization) is the most well-known theory of motivation. It states that while no need is ever fully satisfied, a need that is at least partially met ends to be motivating.

According to Maslow, to motivate someone, we need to determine which level of the hierarchy they are currently at and concentrate on meeting their needs at or above that level. Workers who are keen on motivation and enjoy working, are more likely to make valuable contributions to the company, which can increase creativity, productivity, and profitability. Today's ever-evolving society of different cultures, perspectives, attitudes, opinions, and values could be deduced from the differences in generations. However, motivation is not a universal concept. This means that people and generations differ in their values, expectations, and life experiences. Thus, building a motivated and productive workforce requires time and effort in finding ways and strategies to effectively motivate workers from various generations. Managers and other leaders must understand the motivators of various generations, particularly Generation X, Generation Y (also referred to as Millennials), and Generation Z, to effectively engage and retain their workforce. Through literature review, analysis, and discussion, this research essay will provide a comprehensive analysis of various motivation theories and experiments conducted in the last few years regarding differences in generational motivation and performance in the workplace. The purpose of this research essay is to examine workplace motivation in each of these generations by identifying their similarities and differences along with the main habits and values that they implement in organizational behavior. This research essay also aims to outline suggestions for companies on their motivational strategies and provide parameters for future implications.

2. DATA AND METHODOLOGY

Research was conducted based on the data available in the secondary sources. The study delved into various articles exploring workplace motivation across different generations. The sources utilized include works such as Mahmoud et al. (2021), Barford and Hester (2011), Flippin (2017a, 2017b), Kagan and Lissitsa (2023), and Twenge et al. (2010). These articles collectively emphasize the significant generational disparities in workplace attitudes and values. The search was facilitated through databases such as Google Scholar, RIT libraries, Google Books, and ACM Digital Library, employing keywords such as "Workplace motivation in X, Y, Z generations," "Analysis of generation Y," "Work differences in generations," and "Generations X, Y, Z."

Table following on the next page

Source(s)	Year	Name of the Article	Conclusion
Mahmoud, A. B., Fuxman, L., Mohr, I., Reisel, W. D., & Grigoriou, N.	2021	"We aren't your reincarnation!" Workplace motivation across X, Y and Z generations.	There are significant generational differences in workplace motivation. Generation X values autonomy and job security, Generation Y values collaboration and work-life balance, and Generation Z values financial security and mental health resources.
Barford, I., & Hester, P.	2011	Analysis of generation Y workforce motivation using multi attribute utility theory.	Generation Y (Millennials) is motivated by opportunities for collaboration, personal growth, and a work-life balance.
Flippin, C. S.	2017a	Generation Z in the Workplace: Helping the Newest Generation in the Workforce Build Successful Working Relationships and Career Paths.	Generation Z values financial security and prioritizes mental health and well-being, showing traits of resilience and individualism.
Flippin, C. S.	2017b	Millennials in the Workplace: Helping the Largest Generation Group Succeed at Work and in Their Careers.	Millennials (Generation Y) are driven by transparency, work-life balance, and opportunities for growth, showing social consciousness and adaptability.
Kagan, M., & Lissitsa, S.	2023	Generations X, Y, Z: Attitudes toward social workers in the age of media technologies.	Each generation's work attitudes are shaped by their unique formative events, influencing their motivation and attitudes toward social issues and technology.
Twenge, J. M., Campbell, S. M., Hoffman, B. J., & Lance, C. E.	2010	Generational differences in work values: Leisure and extrinsic values increasing, social and intrinsic values decreasing.	Generational differences in work values are evident, with an increasing focus on extrinsic values like financial rewards and a decreasing focus on social and intrinsic values.

*Table 1: Overview of the most relevant articles that were used and conclusions.
 (Source: Authors, based on the most relevant sources used)*

Data Base	Keywords Searched
Google Scholar	"Workplace motivation in X, Y, Z generations," "Analysis of generation Y," "Work differences in generations," "Generations X, Y, Z"
RIT libraries	"Attitudes of generations X, Y, Z," "Generational differences in work"
Google Books	"Generation Z in the workplace," "Generation Y in the workplace"
ACM Digital Library	"Generational differences in workplace," "Generational motivation"

*Table 2: Overview of the most relevant databases and keywords that were used.
 (Source: Authors, based on the most relevant sources used)*

3. LITERATURE REVIEW

3.1. Generational Cohort Theory

According to the Generational Cohort Theory, which was proposed by Inglehart in 1977, it is possible to divide a population into generations based on similar characteristics. According to this theory, a cohort consists of people who were born 20–25 years apart or more. The theory suggests that a generational cohort consists of individuals with similar ideas, values, beliefs, and attitudes as a result of common experiences and events—economic, social, and political—shared by the cohort during their formative early adulthood years from ages 17 to 24 (Strauss & Howe, 1991). This statement can also be supported by Twenge et al. (2010), individuals coming from the same generation have experienced and shared comparable historical, social, and cultural events, which nowadays, have shaped the development of their attitudes and values.

3.2. Generational categories

A research study titled "*We aren't your reincarnation!*" *Workplace motivation across X, Y and Z generations* ", was written by Mahmoud, A. B., Fuxman, L., Mohr, I., Reisel, W. D., & Grigoriou, where they divided the different generations into the following categories:

- 1) Generation X – individuals born between 1965 and 1981.
- 2) Generation Y – individuals born between 1982 and 1999.
- 3) Generation Z – individuals born between 2000 and 2012.

According to M. Kagan and S. Lissitsa, "The early 1980s and 1990s, the formative years of Generation X individuals, was a period of economic recession, higher divorce rates and the spread of AIDS." To summarize, there was a great deal of social and economic uncertainty that impacted the childhood and adulthood of Generation X. During this time, Generation X children needed to become mature and independent quicker than anticipated. Generation X individuals have a strong need for surveillance because they want to be aware of activities and acts occurring nationally and internationally. The common characteristics generally associated with Generation X are "individualism, self-reliance, skepticism, a lack of social skills, and strong technical ability" (Barford & Hester, 2011). As mentioned in the works of Shaw & Fairhurst (2008), Generation X members are perceived as pessimistic, cynical, and socially insecure individuals lacking in traditional values. On the other hand, Generation Y's formative years aligned with economic expansion. As for Generation Y, they grew up during a time when technological development accelerated, including the introduction of the Internet. During this time, the use of social media grew, globalization trends expanded, and popular culture exerted a profound influence on people's lifestyles. According to Kagan and Lissitsa (2023), Generation Y is renowned for being socially conscious and passionate about social justice issues. They are quick and energetic, which allows them to multitask. Compared to other generations, Generation Y appears to take a more relaxed and enjoyable approach and utilize new technologies in many of their social interactions, hobbies, friendships, and civic engagements. As mentioned in the study by Mahmoud et al. (2021), being given the chance to grow as an employee, encouraging transparency and authenticity, and emphasizing work-life balance are all considered to be highly motivating to the Generation Y. "Generation Z was molded by a series of recessions and financial crises, wars and threats of terrorism, political unrest and the constant presence of social media." (Parment, 2011) We may therefore assume that Generation Z requires an elevated level of surveillance similar to Generation X. Compared to earlier generations, Generation Z members have experienced mental health issues and their fair share of difficulties. They are more inclined to look for resources and assistance on regulating their mental health and wellbeing. The characteristics of Generation Z tend toward pessimism and anxiety about their future as well as lack of trust in others (Adamy, 2018). Moreover, as organizations increasingly focus on diversity and inclusion, understanding the nuances of generational differences in the workplace becomes imperative for fostering a harmonious and productive environment across all age groups (Parry & Urwin, 2011)

Generation	Birth Years	Key Formative Events	Core Characteristics
X	1965 – 1981	Economic recession, AIDS, higher divorce rates	Individualism, self-reliance, scepticism
Y	1982 – 1999	Technological advancements, rise of Internet, globalization	Socially conscious, multitasking, relaxed approach
Z	2000 - 2012	Economic recessions, financial crises, rise of social media	Pessimism, anxiety, focus on mental health

Table 3: Overview of generational cohorts characteristics based on birth year.
 (Source: Authors, based on the most relevant sources used)

Generation	Extrinsic Motivation Factors	Intrinsic Motivation Factors
X	Financial rewards, job security	Autonomy, independence, self-direction
Y	Work-life balance, collaboration opportunities	Personal growth, transparency, authenticity
Z	Materialistic rewards, financial security	Well-being, mental health resources, resilience

*Table 4: Overview of generational motivational factors based on birth year.
 (Source: Authors, based on the most relevant sources used)*

4. RESULTS

4.1. Generational variations in motivation

Based on preliminary and comprehensive research, it appears that Generation X, Y, and Z differ significantly in terms of intrinsic and extrinsic motivation factors. Autonomy and independence are valued equally by Generation X, but financial rewards and job security are valued more. In contrast, Generation Y places a strong emphasis on opportunities for collaboration, personal development, and work-life balance. While Generation Z is very focused on materialistic rewards and financial security, they also place a lot of emphasis on mental health resources and well-being.

4.2. Motivational drivers of generation X

Generation X is shaped by various economic recessions and social destructions which lead them to develop traits of individualism, self-reliance, and skepticism. This generation seems to value autonomy, independence, and self-direction. When it comes to work attitudes, Generation X is most motivated as they value social extrinsic regulations as a source of employees' overall motivation. Similarly, they trust their managers and supervisors and they put complete faith in the goals and objectives of the organization without doubting ethical aspects.

4.3. Motivational drivers of generation Y

Generation Y, also known as Millennials, grew up during a time of rapid technological advancements and globalization. This makes the generations very adaptable to change, conscious of social issues, and enthusiastic about their rights. When it comes to work attitudes, Generation Y is similar to Generation X, as they are motivated by extrinsic work values. They value work-life balance and opportunities for collaboration, both in their personal and professional aspect. However, Generation Z dislikes hierarchies and is often characterized as impatient. Generation Y can be motivated as long as their managers are transparent, inclusive, and supportive and align with their personal values in the workplace.

4.4. Motivational drivers of generation Z

Generation Z is the newest entrant to the workforce; however, they have also been shaped by various economic uncertainties, rapid and uncontrollable growth of social media, and political conflicts. Not only this but due to rapid use of technology in their childhood, they lack face-to-face conversation and often portray signs of anxiety, mental health issues and are more sensitive. Nevertheless, some are still very vocal and exhibit traits of resilience and individualism. Generation Z is aware of obtaining financial security, but they will always prioritize their well-being over the measurable success of an organization. They are similar to Generation Y as they value having a fair work-life balance. When it comes to work attitudes, Generation Z is motivated by materialistic extrinsic regulations. Finally, intrinsic motivation contributes more to Generation Z employees' overall work motivation than it does for Generation X and Generation Y.

4.5. Generational differences in technological adaptation

According to a study by Shelley et al. (2004), it was stated that lack of access to and familiarity with IT worsens the ability of older individuals. This study highlights how differences in involvement across age groups can be reflected in technological literacy by examining the effects of generational and socioeconomic differences on IT literacy and motivation in the workplace. Another study points out "...Currently, three generations...have a different approach to (technological) changes being implemented nowadays" (Grenčíková & Vojtovič, 2017). For example, compared to Generation Y and Z, Generation X may display separated technological adaptations and motivations due to the economic recessions and technological advancements of the late 20th century. Generation X workers may approach IT with a combination of traditional work values and pragmatic technology use due to having experienced the shift to digital technologies later in their careers. In contrast, Generation Y and Z, born into the digital age, might be more accustomed to and knowledgeable about IT tools, incorporating them easily into their daily workdays and indicating a preference for work environments that prioritize innovation and adaptability in technology.

4.6. Generational differences in leadership communication styles and preferences

In regard to communicational styles and preferences, Generation X tends to have different communication preferences from those of younger generations. However, Generation X and Generation Y are more similar to each other in communication types and more different than Generation Z. For instance, Generation Z does not prefer to use e-mail to communicate in the workplace. They are most interested in texting (Seemiller and Grace, 2019), which is not ideal for Generation X. Generation X is defined as self-directed, skeptical, and autonomous, born during a time of rapid change. They seek a balance between their work life and personal life and are not motivated by authority and micromanagement (Waltz et al., 2020). Generation Y is often seen as confident, connected, and adaptable (Taylor and Keeter, 2010). Employees from Generation Z are aware of the importance of financial security and the satisfaction that comes from doing well at work. However, they are strongly against and disagree with the thought of sacrificing their lives for professional success. (Flippin, 2017a). Both Generation Y and Generation Z are deemed to be more ethnically diverse than any previous generation (Flippin, 2017a, b). A useful strategy suggested by Baum (2019) when employing Generation Y is to give them a "voice" by engaging them in work-related conversations.

5. DISCUSSION

5.1. Implications of the literature review

Generational differences are one of the main causes of conflict in the workplace as due to mixing generations in a single organization. According to Mahmoud et al. (2021), "employers need to detect and understand generational differences, which may predict motivation to perform on the job." As a result, to adjust to the changing and diverse nature of a workforce, organizations need to continuously change and implement adequate organizational practices to meet the needs of their different generational workforces. Similarly, "if employees are not motivated to perform their tasks, this will significantly affect the development and success of an organization" (Mahmoud and Reisel, 2014). Mahmoud et al. (2021) argue that it is crucial to understand generational differences in the workplace as they may lead to conflict and low engagement among employees and management. However, if generational differences are effectively managed, a positive work culture can be created, and employee motivation and engagement should increase. For instance, companies could offer a supportive work environment with transparent procedures, clear reward systems, and unambiguous development indicators when hiring members of younger generations, such as Generation Y and Generation Z.

Another example shown in previous studies, emphasized that communications is another way of overcoming conflicts in the workplace due to generational differences. Communication styles vary across generations but can also serve as a helpful guide to mitigating conflicts and improving harmony in the workplace where employees feel valued, heard, and motivated to do their best.

5.2. Limitations and future research

The scope of this study was restricted to analysing general workplace motivation factors for Generations X, Y, and Z. Subsequent studies may focus on certain sectors like technology, healthcare, and education to see how generational motivation differences appear in different work environments. Furthermore, given the increasing popularity of remote and hybrid work arrangements since the pandemic, investigating the effects of these work arrangements on generational motivation would yield insightful information. Examining how organizational culture and particular approaches to leadership affect motivation in various generations could add to our knowledge and provide more focused methods for raising worker satisfaction and output.

6. CONCLUSION

In conclusion, enhancing job satisfaction, productivity, and general employee motivation in the workplace requires the awareness and ability to manage generational differences. Every generation brings its values, preferences, and communication styles to the workplace, shaped by its own experiences and cultural shifts. Due to social turmoil and economic instability, Generation X places a high importance on independence, self-reliance, and autonomy. They are driven by material gains and have faith in their managers' and supervisors' abilities to lead. On the other hand, work-life balance, teamwork, and transparency in the workplace are highly valued by Generation Z and Generation Y (Millennials). They appreciate chances for both professional and personal development, are socially conscious, and look for purpose in their work. Adapting to new technologies is essential for inspiring future generations. When given access to cutting-edge technical tools and platforms, Generation Y and Generation Z exhibit higher levels of job motivation, favouring contemporary and effective workflow and communication techniques. However, Generation X tends to favour more conventional approaches, yet they are willing to adopt new technologies when needed. Organizations must implement proactive strategies that cater to the preferences of each generation to manage generational differences effectively. This could mean establishing a welcoming workplace, providing clear guidelines, understandable incentive structures, and chances for both personal and professional advancement. Harmony in the workplace and the resolution of conflicts resulting from generational differences also depend on effective communication. Organizations can foster a culture where employees feel appreciated, respected, and inspired to give their best work by encouraging open communication and understanding among generations. In the end, valuing generational diversity can increase job satisfaction and organizational performance. Managers and other leaders need to modify their policies and practices to accommodate their multigenerational workforce as it continues to change.

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IMPACT OF DENTISTRY AND AESTHETIC SURGERY ON SUSTAINABLE HEALTH TOURISM IN RURAL AREAS: A THEORETICAL MODEL

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ABSTRACT

The paper explores the establishment and growth of private dental and aesthetic surgery practices in rural areas, focusing on their long-term sustainability. It examines how these practices can be integrated with economic development, leading to improved accessibility to healthcare, economic growth, demographic balance, and environmental sustainability. The study also delves into healthcare practices' environmental impact, information technology use, public health, and interdisciplinary collaboration to promote sustainability. The proposed strategic model offers recommendations for Croatian policymakers, healthcare providers, and local communities, including the provision of telemedicine, local business development through medical tourism, the adoption of eco-friendly healthcare practices, and the implementation of an effective marketing strategy. In conclusion, the study suggests that developing private dental and cosmetic surgery services in rural areas can transform these areas into sustainable communities, benefiting both residents and medical tourists.

Keywords: *Aesthetic surgery, Dentistry, Environmental sustainability, Health Tourism, Rural Development, Thematic network analysis*

1. INTRODUCTION

The paper presents the results of the qualitative analysis of articles discussing investment in private dental and aesthetic surgery practices in rural areas. These investments present both a significant challenge and an opportunity for qualitative changes in community life and the initiation of economic development associated with tourism (Tsekouropoulos et al., 2023). For instance, developing private health infrastructure in rural areas enhances dental care and directly and indirectly decreases rural-urban migration (Giribabu et al., 2019). Medical tourism, particularly in dental and cosmetic procedures, is a rapidly growing industry that rural areas should embrace to boost their economic potential as unexplored travel destinations (Swenson & Bansal, 2024). Croatia, with its rich natural and cultural heritage, risks losing out on the benefits of medical tourism if it does not take action. Investing in sustainable practices and offering dental and cosmetic procedures can attract more tourists, leading to increased income for the local population and improved healthcare infrastructure.

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This would also have positive impacts on social and environmental aspects. A more robust healthcare infrastructure is always advantageous for a community, and success in one area can lead to growth in rural entrepreneurship and employment. However, it is essential to ensure that healthcare provision through sustainable policies does not harm ecosystems or deplete natural resources (Paunović et al., 2024). The authors of this study conducted a thematic analysis of literature published from 2014 to April 30, 2024, to theoretically demonstrate the potential development opportunities and the actual impact of dental and aesthetic surgery and medical tourism on the sustainable development of rural areas in Croatia. They used Google Scholar as the primary source for their analysis. The study's final contribution is a formation of a theoretical model based on the results from the thematic analysis of available literature. This model will provide a foundation for further research studies and policy strategies for sustainable development. It integrates learning models and theories from health economics, development studies, and sustainable development. The model offers a valuable tool for understanding the complex interrelationships between health services and sustainable rural development. We focus on the following research questions through qualitative research, including the analysis of research and professional texts:

- 1) What is the impact of dental and cosmetic surgery development on the accessibility of health services in rural areas?
- 2) What are the economic consequences of the development of dental and cosmetic surgery for rural areas?
- 3) How does developing these health services affect rural communities' migration patterns and demographic stability?
- 4) What are the social and environmental implications of developing dental and cosmetic surgery for sustainable rural development?
- 5) What is the potential role of health tourism in supporting sustainable rural development?

In our discussion, we will explore the hidden meanings within texts, consider new findings to address research questions and emphasise the importance of policy implications. These findings have been developed based on proven results to guide decision-makers, health professionals, researchers, and local communities in implementing development strategies to achieve sustainable development in rural areas. Integrating dental and aesthetic services with medical tourism can pave the way for sustainable development, improved quality of life, and economic growth for rural populations.

2. THEORETICAL BACKGROUND

Dental and aesthetic surgery development and medical tourism are opportunities for sustainable development in rural areas. The main challenge is the inadequate healthcare infrastructure in rural areas, impacting residents' quality of life. Technology, such as telemedicine, can help bridge the gap. Developing dental and aesthetic surgery services can also contribute to economic growth through medical tourism, ultimately benefiting rural economies. Sustainable development and environmental perspectives are crucial for rural areas. Integrating dental and aesthetic surgery sessions with sustainability practices can lead to long-term benefits for the local population. For example, according to Qureshy et al. (2017), medical tourism can be sustainable if it has minimal environmental impact and substantially benefits the local population. Similarly, Streimikiene et al. (2021) suggest that promoting green practices in healthcare can make rural areas more attractive to tourists and residents, contributing to sustainability. This involves building energy-efficient healthcare facilities, managing waste, and using renewable resources.

These practices not only make healthcare services more eco-friendly but also appeal to eco-conscious tourists, enhancing the reputation of rural health service providers as pioneers in sustainable medical tourism (Charati et al., 2024; Mittal et al., 2020). Providing dental and aesthetic surgery services in rural areas is believed to help retain the population and improve living standards, thus reducing migration to urban centres (Bernard et al., 2023). Medical tourism could also support economic growth in rural areas. However, success in this endeavour requires strategic marketing and collaboration with tourism and healthcare networks (Figueiredo et al., 2024). Recent trends in medical tourism and healthcare development show a growing interest in integrating advanced technologies and sustainable practices. For example, the healthcare sector has embraced telemedicine and digital health platforms, creating new opportunities for enhancing rural healthcare (Gurupur & Miao, 2022). Additionally, the concept of personalised and patient-centred care has various applications that influence the structure of rural health development (Kesar & Mikulić, 2017). It is important to note that in the future, Artificial Intelligence (AI) and Machine Learning (ML) may be used in diagnostics to improve the accuracy of treatment plans. AI and ML features can offer valuable insights for healthcare professionals, enabling them to deliver higher-quality care more efficiently. Furthermore, AI and ML have the potential to streamline processes, reduce costs, and enhance the patient experience (Alowais et al., 2023). Additionally, numerous cross-border collaborations and healthcare partnerships support rural healthcare services (Svensson, 2017). International partners are becoming increasingly involved, granting rural health providers access to a broader range of expertise, resources, and technologies, ultimately enhancing service sustainability. However, they also bring specific cultural, financial, and service quality risk factors (Demonja & Uglešić, 2020).

3. Methodology

3.1. Thematic Analysis

The study utilised thematic analysis of texts, which enables identifying, analysing, and reporting patterns or themes within the data. This method provides minimal organisation for description and yields rich details from the data set (Attride-Stirling, 2001). Additionally, it provides access to various aspects of the research topic in an interpretive way.

3.2. Documents

The study employed a thematic network to synthesise the main findings of 150 articles published between 2015 and April 30, 2024. These articles focused on sustainability in dentistry and aesthetic surgery, including its emerging patterns and relationship with developing countries. Due to its wide range of content, Google Scholar was used for article selection, with 237 texts being rejected.

3.2.1 Inclusion and exclusion criteria

Inclusion Criteria: papers published in English related to at least three primary keywords were included. This encompasses peer-reviewed journal articles, review articles and conference papers. Studies with empirical data, theoretical insights, or extensive review articles related to the theme were also considered.

Exclusion Criteria: articles not available in full text, papers from non-peer-reviewed sources, and studies unrelated to the research questions were excluded from the research.

4. RESULTS

4.1 Thematic analysis

The authors conducted a thematic analysis to identify key themes and patterns in the selected literature.

The authors followed these steps:

- Coding: each paper's key concepts and findings were coded and categorised according to the research objectives.
- Thematic network analysis: the co-occurrence matrix and network graph was used to analyse the implicit relationships between the themes. This helped the authors to identify the central themes and how they are linked.

4.2. Findings

The following results were identified through thematic analysis:

1. Descriptive statistics

The landscape of research topics in sustainability, dentistry, aesthetic surgery and rural development over the last decade is shown in the descriptive statistics. Key findings are:

- Publication Trend: the total number of analysed papers has increased from 2014 to 2024, reaching a peak of 20 in 2023.
- Analysis by keywords: The most frequent word in the keyword lists is "sustainability", which appears 75 times in the paper. Other recurring keywords include "dentistry", which appears 68 times, "aesthetic surgery", which appears 50 times, and "rural development", which appears 45 times. This indicates a significant focus on these particular areas of sustainability integration.
- Contributions from Journals: The critical journals in this area include Tourism Management, International Journal of Contemporary Dental & Medical Reviews, Gender, Place & Culture, Sustainability, Review of Tourism Research, Globalization & Health, Journal of Medical and Dental Science Research, European Journal of Social Science Research, Rural Society, and Current Issues in Tourism. The analysed papers illustrate the interdisciplinary nature of research in this area, with contributions from various journals focusing on healthcare, sustainability, and rural development.
- Limitations of the study: Database coverage - relying on specific academic databases may have excluded relevant studies not indexed in these sources. Language limitation - limiting the search to English-language publications may have excluded relevant research published in other languages. Subjectivity of analysis - Thematic analysis involves a degree of subjectivity that may influence the interpretation of the results.
- Thematic Analysis: the main themes are the environmental impact of healthcare practices, the integration of digital technology, sustainable development in rural areas, public health, and interdisciplinary collaboration for sustainability. These themes are central to ongoing discussions and research efforts to make healthcare services more sustainable and promote rural development and tourism.

Table 1 summarises the key themes and challenges identified through the text's thematic analysis. The table results offer valuable insights for future research and policy efforts to promote sustainable health practices in dentistry and cosmetic surgery and support sustainable development and tourism in rural areas.

Table following on the next page

Global theme	Sub-theme 1	Sub-theme 2
Environmental Impact of Healthcare Practices	Resource Consumption	Waste Management
Integration of Digital Technology	Accessibility and Infrastructure	Training and Adoption
Sustainable Tourism Development in Rural Areas	Infrastructure Deficiencies	Economic Constraints
Public Health and Community Well-being	Healthcare Access	Health Education
Interdisciplinary Approaches to Sustainability	Collaboration Barriers	Policy and Regulation

Table 1: Global Theme
 (Source: Authors' analysis)

Table 1 summarises the key global themes identified from the thematic analysis of the reviewed papers, along with their associated sub-themes. Each global theme represents a significant area of focus within the research landscape, emphasising critical issues and challenges being addressed by scholars and practitioners (Attride-Stirling, 2001).

1) The environmental impact of healthcare practices:

- Resource consumption represents a significant issue in healthcare. This sub-theme addresses the high resource usage levels, such as materials and energy, particularly in dental and surgical procedures. This underscores the necessity for more efficient resource use to minimise environmental damage.
- Waste management is a pivotal aspect of environmental impact assessment in healthcare. This sub-theme addresses the challenges associated with the disposal and management of medical waste. Implementing effective waste management practices is of paramount importance to reduce environmental pollution and ensure the safety of the public.

2) The incorporation of digital technology:

- Accessibility and Infrastructure: this sub-topic focuses on the challenges of implementing digital healthcare solutions, such as teledentistry and telemedicine, in areas with limited digital infrastructure. It emphasises the need to improve digital accessibility to enhance healthcare delivery.
- Training and Adoption: this subtopic stresses the importance of adequately training healthcare professionals to adopt and use digital technologies effectively. Overcoming resistance to new technologies and ensuring proper usage is crucial for successful integration and the long-term development of rural areas.

3) Sustainable development in rural areas:

- Infrastructural deficiencies: this sub-theme addresses the lack of vital infrastructure in rural areas, including access to clean water, sanitation, and electricity. These deficiencies hinder the delivery of healthcare services and the implementation of sustainable development initiatives
- Economic Constraints: this sub-theme focuses on the financial limitations that hinder rural communities' ability to invest in sustainable infrastructure and healthcare improvements, posing a significant obstacle to sustainable rural development.

4) Public Health and Community Well-being:

- Healthcare Access: this sub-theme addresses the challenges of delivering sufficient healthcare services to rural and remote populations. Geographic isolation and transportation issues frequently restrict access to essential healthcare.

- **Health Education:** this sub-theme underscores the significance of educating communities about sustainable health practices and preventive care. Effective health education initiatives are vital for enhancing public health outcomes and promoting community well-being.
- 5) The potential of interdisciplinary approaches to sustainability:
- **Collaboration barriers:** this sub-theme highlights the challenges in achieving effective interdisciplinary collaboration among various stakeholders, including healthcare providers, environmental scientists, policymakers, and community organisations. Collaboration is essential for addressing complex sustainability issues.
 - **Policy and regulation:** this sub-theme concerns developing and implementing policies that support sustainability in healthcare and rural development. It addresses the complexities involved in developing and implementing such policies. The necessity for comprehensive policies and the challenges presented by regulatory frameworks are crucial areas of focus for future research.

5. DISCUSSION

The discussion will start with a comprehensive overview of the research questions in the context of the development of dentistry and aesthetic surgery. This includes their contribution to the sustainable development of rural areas, including tourism. The responses to these questions will help clarify the results of the Thematic Network. The development of dentistry and cosmetic surgery in rural areas significantly improves the accessibility of health services. It helps to build the health infrastructure for other health services in private healthcare (Barnett et al., 2017). One significant finding is that these services attract health workers to rural health systems, enhancing the overall quality of healthcare in the community (Esu et al., 2021). Additionally, the integration of telemedicine allows access to health services even in remote areas, reducing the health disparities between urban and rural areas. Telemedicine provides solutions for limited health resources and enables timely health consultations and follow-up services, which are crucial for sustainable healthcare in rural areas (Haleem et al., 2021). Investing in private dental and cosmetic surgery clinics in rural areas significantly impacts the local economy (Ancy et al., 2020). The development of infrastructure for medical tourism, including hotels, restaurants, and transport services, benefits both directly and indirectly from foreign patients. This economic growth creates employment opportunities for residents and reduces migration to urban centres. The potential for growth in medical tourism is high due to the stimulation of local investment and the direct impact on the labour market. Establishing these services also increases the demand for supportive services like catering, trade, and transport, creating a chain of economic growth in the region (Beladi et al., 2019). The development of health services considers migration patterns and demographics. Research indicates improved health services contribute to better living conditions, strengthening social cohesion, and reducing demographic imbalances. This is because people are not forced to travel to urban centres in search of better health services, reducing the migration of young people from rural areas (Morton et al., 2017). In addition, the development of health services is believed to lead to a better standard of living and improved health status for rural people, ultimately contributing to the sustainable development of rural areas (Kruk et al., 2018). It is also important to introduce "green" practices in health facilities to minimise environmental impact and attract environmentally conscious tourists (Soares et al., 2023). Building energy-efficient facilities and implementing sustainable practices can help control environmental impacts and attract environmentally conscious tourists in the long term (Connell, 2013). It is crucial to address issues such as high resource consumption and challenges in waste management to reduce environmental damage and ensure public safety (Antoniadou et al., 2021).

Efficient management of clinical practices, including using energy-efficient appliances and recycling medical waste, can significantly contribute to sustainability (Mittal et al., 2020). Integrating digital technologies in healthcare, such as telemedicine, is a game-changer for rural health services. Efforts should be made to improve digital infrastructure and train health workers to use such technologies (Condry & Quan, 2021). The extensive use of telemedicine will likely contribute significantly to urban-rural disparities, such as providing timely and high-quality remote medical care. Economic constraints and a lack of infrastructure are the main barriers to sustainable tourism development in rural areas. Therefore, it is necessary to invest in basic infrastructure and encourage economic investment in rural communities (Apostolopoulos et al., 2020). This includes improving access to clean water, sanitation, and electricity, which is essential for successfully implementing sustainable development initiatives. Public health and community well-being are equally important. Providing health services and health education in any community is crucial for public health and well-being (Das et al., 2020). While private health services are essential, they are still limited by public and private insurance companies' ability to offer the insured a wide range of services (De Wolf & Toebes, 2016). Health education helps increase awareness of sustainable healthy practices (Choirudin et al., 2023). Health outcomes and knowledge of preventive measures tend to increase with better health education campaigns. Similarly, better access to health services can enhance the general well-being of the population, contributing to sustainable development (Winklmayr et al., 2023). A multidisciplinary approach is essential regarding sustainability. Sustainability issues are inherently complex, and involving stakeholders, such as health professionals, environmentalists, and policymakers, may be the only way forward (Roblek & Dimovski, 2024). Future research should continue to focus on implementing policies that support sustainability. Interdisciplinary approaches can provide comprehensive solutions for sustainable health and rural development by bringing together experts from different fields and perspectives in the search for best practices and solutions. Thus, it could be concluded that integrating dental and aesthetic services into medical tourism could influence the sustainability of developing rural areas by improving health services, boosting the local economy, maintaining demographic balance, and introducing practices that support environmental sustainability. To achieve this, policies focus on improving health infrastructure, telemedicine services, economic investment to promote medical tourism, green practices in health services, and strategic marketing initiatives that address competitiveness issues to attract medical tourists. Policies focused on rural areas can include the impact on their sustainable development, which in turn can contribute to the quality and growth of the economic life of the rural population. The study has identified several shortcomings in the current global solutions for researching the phenomenon under consideration. These shortcomings have been used to formulate recommendations for improving private dental and aesthetic surgical services in rural areas. These recommendations are expected to significantly contribute to the sustainable development of rural areas in Croatia. A conceptual model has been created to develop these recommendations, as shown in Figure 1.

Figure following on the next page

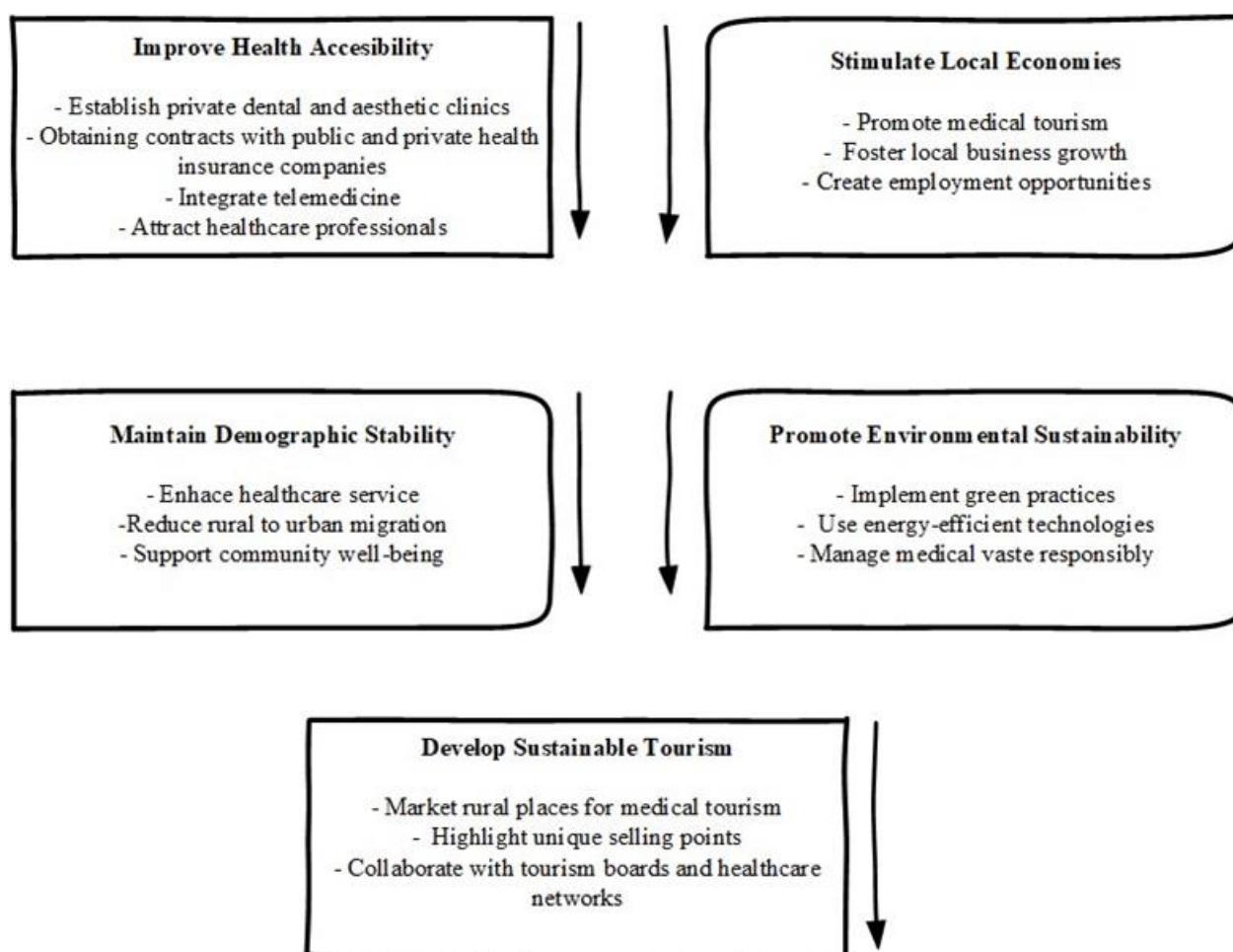


Figure 1: Strategic model for the emergence of private dental and aesthetic surgery in rural areas
 (Source: Authors' analysis)

The strategic model proposed in Figure 1 has been customised to meet the specific needs of Croatia, and Kvarner region. It is based on a series of exemplary practices. By integrating medical tourism with dental and aesthetic services, there is potential to significantly contribute to the sustainable development of rural areas, enhancing the quality of life and fostering economic growth. Engagement with various stakeholders, such as health investors, local authorities, businesses, and the community, will be necessary to implement the model. Implementing sustainable practices across all health and tourism services is a prerequisite for successfully realising the proposed model.

6. CONCLUSION

The emergence of private dental and cosmetic surgery services in rural areas can have several positive impacts, including improving healthcare access, boosting local economies, maintaining demographic stability, and promoting eco-friendly tourism. A strategic model tailored to the needs of Kvarner region, and Croatia has been developed through the analysis of these practices. The study findings suggest that establishing dental and cosmetic surgery clinics and introducing telemedicine significantly improves access to healthcare in rural areas. Offering incentives to attract medical personnel to rural areas is crucial in reducing health disparities between urban and rural areas. The growth of medical tourism will create new job opportunities and reduce the need for people to relocate to urban areas, helping to sustain the rural population and prevent young people from leaving rural areas.

This will ultimately improve living conditions and achieve demographic stability in rural communities. Implementing green practices and energy-efficient technologies can potentially reduce the environmental impact of healthcare services. Responsible management of medical waste and using sustainable materials appeal to eco-conscious tourists and contribute to the sustainable reputation of healthcare providers. The marketing of rural areas as medical tourism destinations and the collaboration with tourism boards can enhance the sustainability and growth of tourism. Promoting distinctive selling points, such as personalised care, tranquil settings, and cultural experiences, enhances the destination's appeal to tourists. Increased collaboration between healthcare investors, local authorities, businesses, and the community is recommended to implement the model successfully. Long-term sustainability requires investments in health and digital infrastructure and sustainable technologies. Training residents for work in health and support industries is crucial. Implementing health education programs to enhance community health is imperative. Effective marketing campaigns to promote medical tourism and the unique features of rural health services are also important. Green practices and responsible waste management in healthcare services will contribute to sustainable development. Implementing these recommendations will contribute to the sustainable development of Kvarner, and in general Croatia's rural areas, enhance the inhabitants' quality of life, and stimulate economic and tourism growth. Developing private dental and cosmetic surgery services may be pivotal in transforming rural areas into dynamic and sustainable communities that will attract residents and visitors.

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CYBERSECURITY IN THE DIGITAL AGE: REGULATORY FRAMEWORK BASED ON THE IMPLEMENTATION OF THE NIS2 DIRECTIVE

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ABSTRACT

In this paper, the author investigates the key aspects of cybersecurity and the NIS2 Directive in the context of the modern digital age. Cybersecurity, by definition, includes a set of processes, measures and standards that guarantee a certain level of reliability when using products and services in cyberspace, whereby the systematic protection of computers and computer networks, The rapid development of technological systems, advances in technology and the increase in the number of Internet users represent an increasing threat of cyber attacks. Cybernetics as a scientific discipline studies the general laws of management and communication processes, and is necessary for information systems to survive. The information system is a part of every business system whose function is the continuous supply of necessary information. For this reason, it is very important to raise the resilience of cyber threats and cybersecurity in the digital age which is the main goal of the new regulatory framework based on the implementation of the NIS2 Directive in the European union.

Keywords: *cybersecurity, cyber threats, digital age, NIS2 Directive, regulatory framework*

1. INTRODUCTION

Cybernetics, by definition, is a science that investigates the general laws of management processes and connections in any systems (technical, biological, economic, social, administrative, etc.) (Vuković, 2012, p 16) According to the National Security Agency (NSA) glossary, cyber is a prefix used to classify a person, thing, or idea as part of the computer or information age. Thus, cybernetics is a scientific discipline, and cyber, as stated in the NSA glossary, refers to the world created by means of computers". It comes from the Greek word kibernien which means to manage. In 1948, Norbert Wiener published a book on cybernetics in which he described considerations and conclusions about the methods and communication of technical devices and living beings (Čizmić, Boban and Zlatović, 2016). In general, cybernetics is the science of controlling machines and living things. From an informational-systemic point of view, cybernetics significantly influences the development of many areas of science, which leads to a new approach to analysis and the development of ideas. Cybernetics builds its observations on systems that have specific goals. Each system is a whole that is connected to the environment with the help of input and output units. Cybernetics also deals with the study of organized systems with internal and external information. With the development of cybernetics, people began to develop means for managing things and energy, which is also the technology of using information. The field of application of cybernetics is large, therefore different branches of cybernetics have developed. The most important branches are information theory, coding theory, game theory, mathematical logic, stochastic processes, robotics, reliability theory. Cybernetics does not offer ready-made solutions to problems, but only offers possibilities for their successful solution. On the other hand, cyberspace is, in short, an electronic medium that facilitates Internet communication. It is used to describe the virtual world of computers. For example, if we send an e-mail from one computer to another, we can say that we sent it via cyberspace. William Gibson first used this word in his book "Neuromancer" written in 1984. The basic feature of cyberspace is interactivity and a virtual environment for a large number of users.

People, information space and cyberspace are often defined the same, but there is a difference. The difference is that information space is a broader term than cyberspace. (Gibson, 1984) In October 2006, the US Joint Chiefs of Staff defined cyberspace as "an area characterized by the use of the electronic and electromagnetic spectrum to store, modify, and exchange data through networked systems and associated physical infrastructures." Users of cyberspace such as households, corporations, universities, governments, armed forces, etc. move through cyberspace to build or reach information destinations that are shared, acquired, and monitored through network systems connected by ordinary telephone lines, microwave devices, satellite uplinks and downlinks, optical fibers, cables, transistors and microchips. The Internet is the most famous and widespread network system. In cyberspace, information is available in real time and its essential determinant becomes temporality, dependence on time, not space. Rapid changes in cyber space require very little time". (Joint Publication 1-02, 2006) In digital age, cyberspace is becoming a new field in international relations. It is virtual, but it is increasingly becoming a real reality in which, in addition to access, transfer and distribution of data and information, there is also blocking and manipulation of the same. Cyber attacks on the digital systems of various institutions and organizations are today one of the biggest threats and dangers to national security. Cyber activities are divided into four areas, namely cybercrime, cyberespionage, cyberterrorism and cyberwar. Cybernetics is defined as a set of scientific disciplines and procedures that are implemented in the management and management of complex systems. Nowadays, the adjective cybernetic is often used as a synonym for the adjective cyber, but the adjective is still not completely correct because cyber implies a world created with the help of computers. In addition, the roots of cybernetics go back to ancient Greece, so the word *kybernaō* means *to manage, to steer*. Given that cybernetics is a newer science, it is interdisciplinary in nature. (Zeman, 1988) Today, it is based on the joint relationship between humans and machines – it is used in control theory, automation theory, and computer programs to reduce many of the time-consuming calculations and decision-making processes previously done by humans. Norbert Wiener defines cybernetics as the science of connection, management and control over machines and living beings, i.e. a discipline that studies the structure of living and non-living regulatory systems and their management. Therefore, he created a general framework for a unified theory that encompasses the behavior of human beings and machines. (Wiener, 1948) Later, this system was called the cybernetic system. The imagined system has three units, i.e. subsystems. (Günther, 1965) The first is the sensor subsystem that is responsible for collecting all the necessary information about the current state of the system, while the second is the subsystem in which the current state is compared with the target state from the collected information and thus the difference is clearly determined. The last, or the third subsystem is the one that affects the behavior of the system by reducing certain differences. With this, the so-called a feedback loop that is best explained as follows. For example, in the process of retrieving a certain object, there is a feedback loop that can include vision, thought process to the brain, but also a stimulus to the muscles that move the hand towards the object. The return connection will be immediately interrupted by closing the eyes, so the process of retrieving the object itself will be difficult. Conversion and creation of information is a fundamental prerequisite for the operation of such systems, so information theory is considered an integral part of cybernetics. Over time, it turned out that this original idea of the theory of management and leadership was too self-confident, but today the appropriate scientific disciplines are responsible for this problem.

2. NATIONAL CYBERSECURITY STRATEGIES AND POLICIES

While the focus of the digital economy is based on the application of information and communication technologies (hereinafter: ICT), cybernetics is mainly used for the purposes of comparative studies, specifically of the human nervous system and ICT artifacts.

In addition to this historical part, it is necessary to explain certain terminology related to security in general. The International Telecommunication Union (ITU) defines cybersecurity as a collection of tools, policies, actions, training, best practices, security concepts, security safeguards, guidelines, risk management approaches, assurances and technologies that can be used to protect cyber environments, organizational and user property. (ITU, 2024) This security particularly focuses on data in digital form, such as mobile devices, tablets, computers, network servers and the like. ITU also emphasizes that cyber threats are one of today's major problems, and that is precisely why good international coordination and coping with the so-called cyberspace, i.e. cyberspace, i.e. computer simulated reality based on ICT. Along with land, sea and air, it is considered the fourth domain of human activity. (ITU, 2024) Therefore, in order for the implementation of cybersecurity to be successful, other types of security - information security, application security, network security and internet security - must also participate. Information security aims to protect user privacy and ensure the durability and availability of information. Although today they are often used as synonyms, information security should be distinguished from cybersecurity in that cybersecurity is a set of practices used to provide security against internet attacks, while information security is only a sub discipline of cybersecurity. On the other hand, application security is the process performed to apply appropriate controls and measurements to organizational applications. (Horović, Boban and Stipanović, 2021) The task of network security is to design, implement and work on networks, and of Internet security to protect Internet-connected services. It consists of a series of security tactics to protect activities and transactions carried out over the Internet and are intended to protect users from threats, such as hacking into computer systems, e-mail addresses or websites (Hamidović, 2015). Today's modern society depends on technologies and all the problems that happen in cyberspace affect all segments of society, and society must be aware of that. Cyber wars have been going on for several years, and interest in the problems they bring is often focused only on the incidents they can cause and how to fight them, while concern, prevention and investment in better cybersecurity in fact, it is neglected, therefore this paper tries to answer the question why awareness of the importance of cybersecurity is so little developed and why certain measures are not taken. There are certain paradoxes that best explain the growing awareness of the importance of cybersecurity. They are mostly in close contact with politics. Namely, the government is the one that needs to monitor user needs, but the problem is that it requires that the entire process of implementing cybersecurity is carried out for the purpose of monitoring, while still requiring access to user data, whether it is individuals or organizations. Another paradox explains how the government wants help and protection from leading companies, but also does not want any data encryption procedures, or anything else related to cryptography. In addition, this issue requires the cooperation of other countries, usually neighboring countries, in order to resolve threats and conflicts in cyberspace. (De Bruijn and Janssen, 2017) The word policy is generally applied in a variety of cybersecurity situations. Otherwise, it implies the use of guidelines that are intended to maintain cybersecurity itself - it calls for laws and regulations related to information distribution, as well as information protection and computer technology management methods. Furthermore, the cybersecurity policy of states is currently considered a subset of national security policy. Although the country's cybersecurity policy and foreign policy are known to be on the "same plane", these policies do not have the same force as the law. This type of policy contains four so-called management domains - laws and regulations, company policy, technology operations and technology configurations. (Bayuk, 2012, p 4) Each of these domains is a security policy that is specifically applied to a specific domain or set of computers on a given system. Laws and regulations must comply with the appropriate scope, like all other domains and their mission is to wisely and thoughtfully reflect the conceived cyber policy. Such regulations are, for example, clearly visible in China and the USA.

On the one hand, China clearly presented and established its cyber policy by deciding to control every activity in cyber space that poses a risk to the state, and thus created the impression that the Internet serves only the interests of the state. In the US, on the other hand, cybersecurity policy includes strategies, policies, and standards related to cybersecurity and operations. As such, it covers a whole range of threats, international engagement, computer network, information security and notification related to the security and stability of the global information and communication infrastructure. (Bayuk, 2012, p 8) Company policy, as second domain, does not have as strong a policy as the policy of, for example, a higher institution. It can refer to the assessment of information risk in a certain company where each individual with a higher level of employment has the possibility of determining sanctions for those with a lower level of employment. Furthermore, as a third domain, technological operations are singled out, which are crucial in the work of legal and accounting sciences, which in any way have contact with the protection of data, information and telecommunications. In addition, standards are also used (eg NIST - National Institute of Standards and Technology). The last, fourth domain, describes the technological configuration. Configurations refer to the technical editing of the system carried out by administrators with appropriate software. The main aspect of this domain is mutual satisfaction, both for users and service providers. (Bayuk 2012, p10) A strategy like the National Cybersecurity Strategy has the primary goal of establishing a correct, or rational, coordination of various institutions in order to successfully respond to threats in cyberspace. Namely, it should be kept in mind that by creating any strategies, all problems related to computer systems and communication in cyberspace cannot disappear at once. (UVNS, 2015) It is just an initial idea to improve the current state of communication and cybersecurity in general. In addition, the purpose of such a strategy is to protect all users of modern electronic services, both in the public and economic sectors. In this way, the awareness of the importance of cybersecurity and the mechanism of data exchange and access would be more developed. The development of harmonized educational programs in schools and universities would be encouraged by connecting the academic, public and economic sectors. Furthermore, in order for any cyberspace to be clearly presented, designed and safe to use, it should first of all have determined and interested participants. All participants must take certain positions of taking measures within their jurisdiction, cooperate with others, but also adapt when the situation requires it. By integrating all segments of society (different sectors) and coordinating different institutions, it is possible to implement the cybersecurity process in a certain situation. (National cybersecurity strategy of Republic of Croatia, 2015)

3. CHALLENGES OF CYBERSECURITY

The number of cyber attacks is constantly increasing and many scientists predict the probability of catastrophic cyber warfare in the near future. There are constant attempts to solve two of the biggest problems in the network space, which are the huge amount of network traffic and the difficulty in discovering patterns about network traffic. (Wlodarczak, 2017, p 206) Cyber terrorism manifests itself as one of the biggest challenges that knows no borders. It takes place in cyberspace and belongs to a subspecies of terrorism that uses information technology as its weapon in order to achieve a terrorist goal. Among other things, this type of terrorism includes the physical destruction of a device, a system of devices or a certain process in which an IT component participates with the aim of disrupting and destroying it. Such crimes increasingly attract terrorists because they require far fewer resources and because it allows people to be absent from the location of the attack, and it also offers the possibility for the attackers to remain anonymous, that is, unknown (Langner, 2011). As for the definitions of cyber terrorism, there are many of them, but this paper will emphasize the definition of Professor Dorothy Denning, who defines cyber terrorism as the convergence of terrorism and cyberspace, taking into account the type of motivation, the purpose and the objects of the attack.

On the other hand, Professor Mark Pollit describes cyber terrorism as a politically premeditated and motivated attack on information, computer systems and data that results in violence against non-combatant targets under national groups and secret agents. (Włodarczak, 2017, p 208) Cyber attacks on states and their information infrastructures require global responses based on regional agreements. Such attacks are carried out in several countries, which is why the criminal prosecution process itself is extremely complex. Complexity implies that the attacked state invokes international law seeking full justice for the crime committed. In order for states to achieve this, it is necessary to use only regulatory legal mechanisms, which must be supported by international agreements. In the last few years, statistical data indicate that a response to transnational cyber terrorism requires multiple or multilateral cooperation. Information Security Timelines and Statistics states that the targets of cyber attacks in 2020 are in the largest number of individual industries, i.e. production (18.9%), while malicious software manifests itself as the most common techniques (37.8%), followed by identity theft (17.6%) and targeted attacks (10.8%). (Tehrani, P., Manap, A. and Hossein, 2013, pp 207–215) The report also notes that ransomware and DOS attacks continue to be prevalent, particularly in Spain where attacks on research COVID-19 facilities and the Foreign Office in the UK are frequent. (Q1 2020 Cyber Attacks Statistics, 2020)

4. REGULATORY FRAMEWORK OF CYBERSECURITY BASED ON THE IMPLEMENTATION OF THE NIS DIRECTIVES WITH EMPHASIS ON NIS 2 DIRECTIVE

4.1. NIS 1 Directive on the security of network and information systems

First step of developing of framework of cybersecurity was taken on July 6, 2016, when the European Parliament included in the policy the Directive on the security of network and information systems (Directive (EU) 2016/1148). The NIS Directive 1 (Directive (EU) 2016/1148), an acronym for Network and Information Security which consists of 75 introductory statements, 27 articles and three appendices, was the first legislative measure at European level with the aim of enhancing cooperation between Member States and creating a first level of harmonization in the field of cybersecurity. The requirements included in the NIS Directive are intended to be applied to the OES and DSPs of the member states. The directive entered into force in August 2016, and all EU member states were given 21 months to incorporate the provisions of the directive into their national laws. (NIS 1 Directive, 2016) The NIS Directive presents the first legal act on cybersecurity that aims to ensure a high level of network and information system security that imposed an obligation on EU member states to transpose the NIS Directive into national law by 9 May 2018 and to identify operators of essential services ('OES') with a business establishment in their territory by 9 November 2018 (NIS 1 Directive, Article 25). In addition, the NIS Directive entered into force on the twentieth day from the day of its publication in the Official Journal of the European Union (NIS 1 Directive, Article 26). Before the adoption of the NIS Directive, each member state within the EU had very different levels of cybersecurity preparedness, which meant that, overall, the existing capabilities were not sufficient to ensure a high level of security of network and information systems in the EU. As a result of the lack of common requirements for OESs and digital service providers ("DSPs"), consumers and businesses were unequally protected, which prevented the establishment of a harmonized global and effective cooperation mechanism at EU level. (NIS 1 Directive, 2016) The NIS Directive 1 identifies two categories of entities to which specific provisions are addressed:

- Operators of essential services (ESP): public or private entities that play an important role for society and the economy and provide essential services (commonly identified as critical infrastructure). Member States directly identify ESPs in critical sectors (energy, transport, banking, financial markets, health, drinking water supply and distribution, and digital

infrastructure) on the basis of how essential the service is and the risks related to an incident affecting the service.

- Digital service providers (DSP): Companies that provide e-commerce, cloud computing or search engine services (unless they're SMEs). (Meneghetti, 2023)

The NIS Directive 1 leaves Member States free to expand the sectors / categories of entities to which the cyber obligations should apply. The goal of the NIS Directive is to create an overall higher level of cybersecurity in the EU. The directive significantly affects Digital Service Providers (DSPs) and Operators of Essential Services (OES). Operators of essential services include all organizations whose business would be greatly affected in the event of a security breach if they engage in critical social or economic activities. Both DSPs and OESs are now held responsible for reporting major security incidents to Computer Security Incident Response Teams (CSIRTs). Although DSPs are not subject to as strict regulation as operators of essential services, DSPs that are not established in the EU but still operate in the EU still face regulation. Even if DSPs and OESs outsource the maintenance of their information systems to third parties, the NIS Directive still holds them responsible for all security incidents. EU Member States are required to develop an NIS Directive strategy, which includes CSIRTs, along with National Competent Authorities (NCAs) and Single Points of Contact (SPOCs). Such resources have the responsibility to address cybersecurity breaches in a manner that minimizes impact. In addition, all EU member states are encouraged to exchange information on cybersecurity. Security requirements include technical measures that manage the risks of cybersecurity breaches in a preventive manner. Both DSP and OES must provide information that allows for an in-depth assessment of their information systems and security policies. All significant incidents must be reported to the CSIRT. Significant cybersecurity incidents are determined by the number of users affected by the security breach as well as the duration of the incident and the geographic reach of the incident. (Ducuing, 2021) Only 23 member states have fully implemented the measures contained in the NIS Directive. No misdemeanour proceedings have been initiated against them for the implementation of the Directive and it is not expected that they will be initiated in the near future. This failed implementation has led to the fragmentation of cybersecurity capabilities across the EU, with different standards, incident reporting requirements and enforcement requirements implemented in different member states. (ENISA, 2017)

The NIS Directive has three main goals:

- improving national cybersecurity capabilities by implementing the national strategy;
- building cooperation at the EU level; and
- promoting a culture of risk management and incident reporting for OES and DSP. (NIS 1 Directive, 2016)

The NIS Directive covers OES in the following sectors which are considered key services:

- energy: electricity, oil and gas;
- traffic: air, rail, water and road;
- banking: credit institutions;
- financial market infrastructures: trading venues, central counterparties;
- health: health institutions;
- water: supply and distribution of drinking water; and
- digital infrastructure: Internet exchange points, domain name system service providers, top-level domain name registries. (NIS 1 Directive, 2016)

4.2. Implementation of NIS 2 Directive on measures for a high common level of cybersecurity across the union

In December 2022 - The NIS 2 Directive, Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity in the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive) was published. responds to the need to update and strengthen the regulatory framework provided by the NIS Directive 1. Major divergences in the implementation of the obligations under the NIS Directive 1 have led to uneven levels of security and vulnerability among the Member States, with possible impacts on the EU as a whole. The objective of the NIS Directive 2 – which repeals the NIS Directive 1 – is to eliminate the divergences between legal systems, reinforcing cybersecurity obligations, expanding the number of sectors and actors involved and increasing cooperation among Member States to achieve greater uniformity of application. (Meneghetti, 2023)

It is firstly important to state the ongoing deadlines regarding the establishment of the NIS 2 Directive in the member states:

- 1) By October 17, 2024, member states must adopt and publish the measures necessary to comply with the NIS 2 Directive.
- 2) By 17 July 2024 and every 18 months thereafter, EU-CyCLONe shall submit an evaluation report to the European Parliament and the Council.
- 3) By 17 October 2024, the Commission shall adopt implementing acts establishing the technical and methodological requirements of the measures with regard to DNS service providers, TLD name registries, cloud computing service providers, data center service providers, content delivery network providers, managed service providers, managed security service providers, online marketplace, online search engine and social networking service platform providers, and trust service providers.
- 4) On 17 January 2025, the Cooperation Group will, with the help of the Commission and ENISA, and, as necessary, the CSIRTs network, establish the methodology and organizational aspects of peer review with the aim of learning from shared experiences, strengthening mutual trust, achieving a high common level of cybersecurity, as well as strengthening the cybersecurity capabilities and policies of the member states necessary for the implementation of this Directive. Participation in the review is voluntary. Expert checks are carried out by cybersecurity experts. Cybersecurity experts are appointed by at least two Member States other than the Member State being reviewed.
- 5) By April 17, 2025, member states shall establish a list of essential and important entities, as well as entities that provide domain name registration services. Member States shall review and, if necessary, update that list regularly, and thereafter at least every two years.
- 6) By April 17, 2025 and every two years thereafter, the competent authorities shall inform the Commission and the Cooperation Group of the number of essential and important subjects for each sector.
- 7) By 17 October 2027 and every 36 months thereafter, the Commission shall review the functioning of this Directive and report to the European Parliament and the Council. (NIS 2 Directive, 2024)

4.3. The important new obligations of implementation of the NIS 2 directive

4.3.1. Cybersecurity risk-management measures

According to Article 20 (Governance), the governing bodies of essential and important entities must approve the cybersecurity risk management measures taken by those entities, monitor their implementation and "may be held responsible for violations".

Also, in accordance with Article 20, Member States shall ensure that "members of the management bodies of essential and important entities must attend training" and shall encourage essential and important entities to regularly offer similar training to their employees, so that they acquire sufficient knowledge and skills to enable them risk identification and assessment of cybersecurity risk management practices and their impact on the services provided by the entity (NIS 2 Directive, Article 20). According to Article 21 (Cybersecurity risk management measures), essential and important entities must take appropriate and proportionate technical, operational and organizational measures to manage risks for the security of network and information systems that these entities use for their business or to provide their services, and prevent or minimize the impact of incidents on the recipients of their services and on other services (NIS 2 Directive, Article 21). Taking into account the "state-of-the-art" and, where applicable, relevant European and international standards, as well as implementation costs, the above measures ensure the level of security of network and information systems appropriate to the risks. When assessing the proportionality of these measures, it is necessary to take into account the entity's degree of exposure to risks, the entity's size and the probability of occurrence of incidents and their severity, including their social and economic impact. The NIS 2 Directive's measures are based on an cybersecurity risk-management measures that aims to protect network and information systems and the physical environment of those systems from incidents, and will include "at least" the following: (a) policies on risk analysis and information system security; (b) incident handling; (c) business continuity, such as backup management and disaster recovery, and crisis management; (d) supply chain security, including security-related aspects concerning the relationships between each entity and its direct suppliers or service providers; (e) security in network and information systems acquisition, development and maintenance, including vulnerability handling and disclosure; (f) policies and procedures to assess the effectiveness of cybersecurity risk-management measures; (g) basic cyber hygiene practices and cybersecurity training; (h) policies and procedures regarding the use of cryptography and, where appropriate, encryption; (i) human resources security, access control policies and asset management; (j) the use of multi-factor authentication or continuous authentication solutions, secured voice, video and text communications and secured emergency communication systems within the entity, where appropriate. (NIS 2 Directive, Article 21, paragraph 2) The NIS 2 Directive replicates the Council's General Approach on incidents that are considered to be significant and that trigger the notification obligation in its Article 23(1) and (3). Changes to the Council's compromise text mainly relate to the wording of the respective provision when 'the potential to cause/affect' is replaced by 'capable of causing/affecting'. Further, the obligation to notify the service recipient of measures or remedies that they should take in response of a significant cyber threat is adopted. (NIS 2 Directive, Article 23, paragraph 2). Also, the approach to voluntary information sharing of cyber threats and near misses is maintained in Article 30 NIS 2 Directive (Schmitz-Berndt, 2023).

4.3.2. Establishing European cyber crisis liaison organisation network (EU-CyCLONe)

EU-CyCLONe is established to support the coordinated management of large-scale cybersecurity incidents and crises at operational level and to ensure the regular exchange of relevant information among Member States and Union institutions, bodies, offices and agencies. (NIS 2 Directive, Article 15, paragraph 1) It shall be composed of the representatives of Member States' cyber crisis management authorities as well as, in cases where a potential or ongoing large-scale cybersecurity incident has or is likely to have a significant impact on services and activities falling within the scope of this Directive, the Commission. In other cases, the Commission shall participate in the activities of EU-CyCLONe as an observer.

ENISA shall provide the secretariat of EU-CyCLONE and support the secure exchange of information as well as provide necessary tools to support cooperation between Member States ensuring secure exchange of information. Where appropriate, EU-CyCLONE may invite representatives of relevant stakeholders to participate in its work as observers. (NIS 2 Directive, Article 15, paragraph 2) EU-CyCLONE shall have the following tasks: to increase the level of preparedness of the management of large-scale cybersecurity incidents and crises; to develop a shared situational awareness for large-scale cybersecurity incidents and crises; to assess the consequences and impact of relevant large-scale cybersecurity incidents and crises and propose possible mitigation measures; to coordinate the management of large-scale cybersecurity incidents and crises and support decision-making at political level in relation to such incidents and crises; to discuss, upon the request of a Member State concerned, national large-scale cybersecurity incident and crisis response plans referred to in Article 9(4). (NIS 2 Directive, Article 15, paragraph 3)

4.4. Commission guidelines about the relationship between the NIS 2 Directive and the Digital Operational Resilience Act (DORA)

The Commission Guidelines on the application of Article 4 (1) and (2) of the NIS 2 Directive, that was published at the Official Journal of the European Union the 18th of September 2023, covers some of the major areas of concern for entities that try to understand if they must comply with the NIS 2 Directive, or the Digital Operational Resilience Act (DORA) and other sector-specific Union legal acts. Article 4(1) of the NIS 2 Directive provides that, where sector-specific Union legal acts (like DORA, that applies in the financial sector) require essential or important entities to adopt cybersecurity risk-management measures or to notify significant incidents, and where those requirements are at least equivalent in effect to the obligations laid down in the NIS 2 Directive, the relevant provisions of the NIS 2 Directive shall not apply to such entities. The sector-specific provisions will apply. (NIS 2 Directive, Article 4, paragraph 1) That provision further provides that where sector-specific Union legal acts do not cover all entities in a specific sector falling within the scope of the NIS 2 Directive, the relevant provisions of the NIS 2 Directive shall continue to apply to the entities not covered by those sector-specific Union legal acts. Article 4(2)(a) of the NIS 2 Directive provides that cybersecurity risk-management measures that essential or important entities are required to adopt under sector-specific Union legal acts shall be considered to be equivalent in effect to the obligations laid down in the NIS 2 Directive, where those measure are at least equivalent in effect to those laid down in Article 21(1) and (2) of the NIS 2 Directive. (NIS 2 Directive, Article 21) When assessing whether the requirements in a sector-specific Union legal act on cybersecurity risk-management measures are at least equivalent in effect to those laid down in Article 21(1) and (2) of the NIS 2 Directive, the requirements in that sector-specific Union legal act should, at a minimum, correspond to the requirements of those provisions or go beyond them, meaning that the sector-specific provisions may be more granular on substance compared to the corresponding provisions of the NIS 2 Directive. An important consideration when assessing the equivalence of a sector-specific Union legal act with the requirements of Article 21(1) and (2) of the NIS 2 Directive is that the cybersecurity risk-management measures required by the sector-specific Union legal act should be based on an 'all-hazard approach'. Since threats to the security of network and information systems could have different origins, any type of event can have a negative impact on the network information systems of the entity and potentially lead to an incident. (NIS 2 Directive.com, 2024) In that manner, the cybersecurity risk-management measures taken by the entity should protect not only the entity's network and information systems, but also the physical environment of those systems from any event such as sabotage, theft, fire, flood, telecommunication or power failures, or unauthorised physical access that are capable of compromising the availability, authenticity, integrity or confidentiality of stored,

transmitted or processed data or of the services offered by, or accessible via, network and information systems. Accordingly, the cybersecurity risk-management measures required by a sector-specific Union legal act should specifically address the physical and environmental security of network and information systems from systems failure, human error, malicious acts, or natural phenomena as security threats (NIS 2 Directive.com, 2024).

4.5. NIS 2 Directive and General Data Protection Regulation 2016/679 (GDPR) compliance

NIS 2 Directive introduces specific provisions on personal data protection (namely international cooperation or implementation of domain name registration databases), its implementation by the entities concerned will also involve considering the framework already established by the GDPR. Obligation to notify any personal data breach resulting from an incident is stated under article 23 of the new directive. (NIS 2 Directive, Article 23) It is of great importance that entities must notify the national CSIRT or the other national authority of any significant incident having a major impact on their service provision. A significant incident, by definition, is an incident that has caused or is likely to cause serious operational disruption to services or financial loss to the entity concerned, or such an incident has affected or is likely to affect other natural or legal persons by causing considerable material, physical or moral damage. In the field of cybersecurity, while dealing with incidents breaches, the breaches of personal data may also occur as repercussions. (Derolulez, 2024) As such, the competent authorities shall cooperate closely with the supervisory authorities, without prejudice to the competence and tasks of those authorities (NIS 2 Directive, Article 31 paragraph 3) When dealing with incidents giving rise to personal data breaches, the competent authorities shall cooperate closely with the supervisory authorities pursuant to Regulation (EU) 2016/679, without prejudice to the competence and tasks of the supervisory authorities"). Thus, in the context of the supervision or enforcement of obligations under the Directive, where the competent authorities become aware of a breach committed by an entity that is essential or important regarding the obligations of Articles 21 and 23, and that breach may give rise to a personal data breach, the authority shall inform the supervisory authorities without delay. (Derolulez, 2024) In accordance with Article 32 of the GDPR, data controllers and processors implement appropriate technical and organizational measures to guarantee a level of security appropriate to the risk. Article 21 of the Directive lays down a related cybersecurity obligation for essential and important entities, which must take technical, operational, and organizational measures to manage the risks that threaten the security of the networks and information systems that these entities use in the course of their activities or provision of services. (NIS 2 Directive, Article 21) These cybersecurity measures implemented thus contribute to compliance with the personal data security obligations set out in Article 32 of the GDPR. Recitals 77 and 78 of the NIS 2 Directive support this approach, as essential and important entities are responsible for guaranteeing the security of networks and information systems, including the security of data stored, transmitted, and processed by these entities. (NIS 2 Directive, Article 77 and 78) As part of their cybersecurity risk management measures, entities are required to take technical, operational, and organizational measures based on an "all-hazards" approach to protect networks and information systems (NIS 2 Directive, Article 21, paragraph 2). These measures include policies relating to risk analysis and information systems security (NIS 2 Directive, Article 21, paragraph 2). When processing personal data and implementing this type of risk analysis and security policy, entities should consider carrying out a data protection impact assessment (PIA). This impact analysis will include a more technical section on data security risks. This part will enable the data controller/entity to determine the technical and organizational measures required to protect the data.

These measures are inherent to cybersecurity. To demonstrate compliance with the NIS 2 Directive and the GDPR, it will finally be imperative for the entity to document its analyses and measures put in place (Derolulez, 2024).

5. CONCLUSION

Cybernetics as a scientific discipline influences the development of many areas of science that lead to a new approach to analysis and idea development. It offers the possibility for successful problem solving. As a science, it deals with general questions, not how the system works. Given that the systems are different, the way of management is also different, this is precisely why derivatives of cybernetics were created that try to explain the ways of managing a particular system. Cyberspace, although virtual, becomes a real reality in which data manipulation often occurs. The most significant specificities of cyber threats are cyber space and technology that facilitates the implementation of criminal acts. Cyber attacks are one of the biggest threats that are growing with the help of technology, and are divided into cyber crime, cyber espionage, cyber terrorism, cyber war and hybrid war. Cybercrime is criminal acts such as fraud in the field of internet banking, i.e. all acts where the use of a computer is essential for the attack. Cyber espionage is the disclosure of secrets or confidential information using spyware. Furthermore, cyber terrorism can be said to be planned attacks on computer systems by national groups, while cyber war is a war undertaken by states and waged against other states with the aim of destroying their use. A new form of warfare is a hybrid war whose aim is to achieve an economic, political and similar goal. Fighting against the above mentioned cyber threats occurs in the form of international cooperation of specialized organizations. In response to constant threats to security, the Convention on Cybercrime adopted by the Council of Europe is a good basis for the establishment of an effective fight against cybercrime, but also cyber threats in general. The NIS Directive, as an EU legislative framework, laid the foundations for improving the security of networks and information systems within the EU. Through its obligations and directives, it has contributed to raising awareness of cybersecurity and ensuring appropriate protection measures. The latest development in the field of cybersecurity is represented by the NIS2 Directive, which introduces new obligations and strengthens risk and incident management. This legislative framework will significantly shape the future of cybersecurity in the EU.

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CONTRIBUTION TO INTRODUCING A CARBON TAX IN THE REPUBLIC OF CROATIA

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ABSTRACT

CO₂ emissions dominate among greenhouse gas emissions linked to current climate changes. The trend of limiting emissions has affected all areas of life with short deadlines and modest progress to date. A carbon tax is a desirable combination for meeting environmental and fiscal goals in line with the external cost internalization trends. The paper aims to analyze the elements and models of the CO₂ emission unit valorization and estimate the revenues that the introduction of a carbon tax would bring to the Republic of Croatia. Data for the calculation of potential carbon tax revenues originate from the energy balance report of the Republic of Croatia for 2019. Taxable energy amount was a total annual available energy deducted by general consumption energy and processed by national energy conversion factors and CO₂ emission factors. If the proposed German model of taxation of CO₂ emissions – in line with the EU ETS regulation – were to be introduced in the Republic of Croatia, the total revenue from the CO₂ emission tax would amount to around 1.05% of GDP in 2019. The market model for obtaining emission permits seems to be the best form of valorization of the CO₂ emissions.

Keywords: *carbon tax, climate change, CO₂ emissions, Croatia, valorization*

1. INTRODUCTION

CO₂ emissions dominate among greenhouse gas emissions linked to current climate changes. The industry significantly participates in total emissions, especially the transport sector, and maritime transport alone produces about 3% of those emissions [1]. The trend of limiting emissions has affected all areas of life, aiming for a 40% emission reduction by 2030 and a 50% emission reduction by 2050. [2]. More ambitious goals aim to reduce CO₂ emissions by 70% in the industrial sector, particularly the transport sector, or even eliminate them by 2050. Given the short deadlines and modest progress in emission reduction, new tools and regulations that would stimulate and accelerate the reduction of greenhouse gas emissions in the coming period are being considered [3,4]. The carbon tax (CO₂ emission tax), which has already been introduced in some EU countries, could become mandatory for the entire EU and get global significance. Some environmental taxes and excise duties already aim to reduce the use of fossil fuels as the principal source of anthropogenic CO₂. The motivation behind those measures' application was not to reduce greenhouse gas emissions, as they had been introduced long before the link between emissions and climate change became apparent [5]. Regarding worse operating conditions and higher cost of living, current trends about the carbon taxes introduction, along with clear aims and deadlines, could have a notable impact on both the industrial and civilian sectors. This paper aims to analyze the elements and models related to this topic and estimate the revenues that introducing a carbon tax would bring to the Republic of Croatia.

1.1. Valorization of carbon pollution

The valorization of carbon pollution is key to determining the tax burden base, that is, the value of the CO₂ unit. Determining the CO₂ value or price is a sensitive scientific, social and political issue due to professional and social responsibility, as well as the parameters on which it is based. Most parameters are burdened by uncertainty and are difficult to measure, so they are most frequently determined by estimation and retrospectively, when the outcomes are already known, including those attributed to the impact of CO₂ pollution to some extent.

Values predicted for the future are even more uncertain, cannot be measured, and are estimated based on acquired knowledge and experience [6]. In the context of qualitatively limited data, using the value of the CO₂ unit as a multiplier for tax assessment carries the risk of possible injustices and manipulations. Given that said strategic measures are aimed at changing the energy sources on which civilization has been based since the mid-19th century, reckless decisions and measures can have far-reaching socio-economic consequences. The criteria for the valorization of CO₂ values differ, and all of them have the same aim – to reduce the concentration of CO₂ in the atmosphere to approximately 400 ppm (parts per million), which is considered to be the usual atmospheric concentration providing good prospects for life and survival [7]. Concentrations above 2000 ppm are hazardous to health, while those from 1000 to 2000 ppm contribute to climate change and economic and social damage we currently witness. Health risk as a potential indicator of the external cost of CO₂ emissions within the category of external costs of climate change is not a parameter used in the CO₂ price calculation as concentrations of more than 2000 ppm can still be recorded only in closed, stuffy spaces unsuitable for life and work. Therefore, the external cost calculation related to the toxicity of the CO₂ emissions is linked to said specific locations and has no extensive or global significance [8]. The connection between CO₂ emissions and climate change from the late 20th century to the present day is one of the criteria for CO₂ valorization. Here, we encounter difficulties on the very essence of the criteria, as one has to wonder whether the climate change we see today is anthropogenic in origin. The answers to this question are not always affirmative but are sometimes quite the opposite. In the research [9], a regression method established the connection between climate change, energy consumption, and deterioration of air quality. On the same sample, a second regression method demonstrated a relationship to air quality only and not to energy consumption even though an increase in energy consumption by 1% causes an increase in CO₂ emissions by 0.652%. It is difficult to prove a causal link and answer how much economic and social damage has been done by climate change. Natural disasters of all kinds occurred before the climate changes of the modern age as well, in conditions of "normal" CO₂ concentration in the atmosphere, that is, without anthropogenic impact. Global warming causes ice to melt, creating additional volume and terrain suitable for photosynthesis, so this added CO₂ consumption should also include in the budget [10]. Given that these processes occur gradually and discontinuously, the calculation of CO₂ values based on climate change criteria is compromised and practically unusable in practice [6]. The marginal price is the value of each additional carbon unit, respectively, the cost of reducing such a unit. Said value is strongly influenced by economic strength that values vary between countries. In Europe, the cost of reducing CO₂ by 20% is considered to be lower than €100/tCO₂. The global cost is estimated to be \$20–50/tCO_{2eq} (the cost of reducing all greenhouse gases expressed as an equivalent amount of CO₂). The marginal price is probably the most objective criterion for determining the value of CO₂, as invested funds for emission reduction, the total CO₂ emissions, and the reduction level of CO₂ emission or concentration (expressed in ppm) can be connected. Difficulties regarding this criterion arise in the case of low CO₂ emissions when the concentration reduction value is below the standard level (lower than 400 ppm). The value of the CO₂ unit would be a negative number in that case. Economic analysis of such a result leads to the paradoxical conclusion that the pollutants' lowest value can be achieved through low economic activity and energy conservation. In such a way, trying to meet environmental criteria, economic and social sustainability is completely compromised [6]. Even though the climate change and social cost criteria are the most compromised, the latter is often encountered in scientific circles and the public. The global use of this criterion creates the impression that, maybe, is being forced. Said criterion is not based on any parameters that can be accurately measured and are dependent on estimates.

It is very delicate, so even small changes in the fundamental parameters lead to significant differences in the final carbon unit value. Two research teams conducted a parallel study in the same area and time and obtained CO₂ unit values that differed by 600% [7,10,11]. In the coordinate system, the social cost value is at the intersection of the curves representing the social benefits and the social damage caused by pollutants, respectively, CO₂ emissions. As current CO₂ concentrations are still not harmful to human health, the concept of social damage refers to the economic damage attributed to the impact of CO₂. Besides, the social and economic gains from investing in the CO₂ reduction concentration are estimated. The benefits of increased CO₂ concentrations in the atmosphere (e.g., the consequences of global warming such as increased yields or the possibility of three harvests in agriculture, heating savings, easier road maintenance, etc.) should be deducted from social costs [10]. Finally, growth and development projections for the upcoming period, which do not depend only on greenhouse gas emissions, or do to a lesser extent, are also necessary for the calculation. The same projections use discount rates to the CO₂ unit value, and they are lower if the effects of pollution reduction measures are higher. In general, said discount rates are lower in the short and higher in the long term, which means that we are successfully reducing pollution or will be doing so in the future and, consequently, the CO₂ unit value will be lower too. The way of presented criterion indicates that the social cost of carbon is not based on evidence and is impossible to calculate. Both the values of the carbon unit as a social cost and the price policy are managed by influential groups of experts [6,12]. The CO₂ unit value can also be determined as the shadow price. In the absence of relevant market criteria, the shadow price is determined based on one's willingness to pay for some benefit (in this case, for carbon pollution reduction). Despite its precise definition, the shadow price is a political decision whose value does not necessarily have to be lower than the marginal value but depends on the motives behind its determination [6]. The market criteria for determining the CO₂ unit value refer to the trading of annual emission permits. As mentioned earlier, market prices may or may not be relevant. Increased demand would cause a strong growth in the carbon unit value on the free market in powerful economies with sustainability elements, which would jeopardize the businesses of small entrepreneurs. Weak demand in weak economies with no sustainability elements would cause the prices to fall. Paradoxically, the polluters would profit that way. Therefore, the market price of carbon is also under political control, as the upper limit is set for the current and future years. Permits are also traded and resold at prices higher than the purchase price and lower than the current one, counting on the continuous growth of the CO₂ unit value [13,14]. Some countries issue an unlimited number of permits to make a profit, which compromises the purpose of introducing the tax. Due to strict regulations and high purchase prices of annual permissions, a "carbon leakage" phenomenon occurs when businesses move to other countries with more favorable but less sustainable operating conditions [13,15]. All those factors compromise the market criterion by turning it into another form of political value determination. According to this criterion, unit prices, used to be significantly lower in the US than in the EU, since 2020, unexpectedly increased by 300% [16]. In Europe, the total greenhouse gas emissions allowed are regulated by the EU Emissions Trading System (EU ETS) [13], and emission sources include power plants, heavy industrial sites, cement, glass, and paper production, and air transport within the Union [6].

1.2. Internalization trends of carbon pollution costs

The carbon tax was first introduced in Finland, followed by 16 other European countries later. Its values vary from less than €1/tCO₂ to more than €100/tCO₂. They are country-specific and mutually incomparable. In some countries, CO₂ emissions are not taxable but with the option to tax other greenhouse gases emissions instead.

While some countries have applied multiple and significant discount rates others have abolished them. Germany has introduced a market-based CO₂ emissions trading model for transport sectors and all forms of heating not covered by the EU ETS and has announced fixed purchase prices of carbon five years in advance, starting from 2022. The beginning price would be at €30/tCO₂, with an increase of €5 every year until 2026. From 2027 onwards, carbon would be auctioned, i.e., offered on the free market. CO₂ emissions reduction by 3.1 million tons by 2025 and up to 12.4 million tons by 2035 is expected. [13]. At the end of 2021, the average global price of a ton of CO₂ was €22. According to the Paris Agreement, global temperatures must not rise more than 1.5 degrees Celsius compared to the pre-industrial period. This goal to achieve, the average price would have to increase globally to €160/tCO₂ by 2030 [18].

2. MATERIALS AND METHODS

Data for the calculation of potential carbon tax revenues have been taken from the energy balance report of the Republic of Croatia for 2019 [19]. Data for 2020 and 2021 were not used due to the negative impact of the COVID-19 pandemic on the economy [20]. Given the intended taxation model according to the EU ETS and the German model that additionally includes emissions on transport and all forms of heating, total available energy (A) is the subject of the calculation regardless of the amount and form of consumption. The general consumption value (B), not subject to taxation, was deducted from the total amount. In general, the consumption category items were not used in the calculation, nor are there such recommendations because the values of emission factors are so variable and dependent on so many different factors that a fair breakdown would have to concern the end-user, i.e., the emitter. Still, it was not likely to know or determine how much of the total amount of available energy is intended for general consumption, i.e., how much is non-taxable. Thus, certain items in category A might be non-taxable, while some in category B might belong to taxable items. Those were neglected because they are null and void concerning the total amount of energy and depend on fiscal policy details. The official data used in the calculation were not very suitable because a carbon tax has not been introduced yet, so the presentation method could not be adjusted to the calculation purposes. Some data were missed and replaced with estimated or literature data. The accounting value for coal and coke was thus estimated as the mean value regardless of the mutual, quantitative ratio. Refinery products are all products that have been produced in petroleum refineries, namely: refinery gas, liquefied gas, motor gasoline, petroleum, jet fuel, diesel fuel, extra-light fuel oil, fuel oil, straight-run naphtha, lubricating oils, bitumen, paraffin, petroleum coke, and other refinery products [21]. The accounting value for refinery products was estimated as the mean value of 10 refinery products, even though motor gasoline and diesel fuel have made up 2/3 of production [22]. Due to energy imports with unknown conversion and emission factors, uncertainties arise. These factors constitute variable values that depend on the place of production and consumption. Therefore, national emission factors, published annually, are always used for accounting purposes. Literature data have been used for the factors absent in official publications. For the item "other refinery products," oil values have been used. Deviations are minimal and cannot significantly affect the final result and conclusions. If pollution has been expressed in carbon unit values, the equivalent conversion factor for CO₂ emissions is 3.667 [23]. The category of total available energy misses data on waste energy. It is unclear if and how that energy and emissions would be taxable. Total available energy is the energy available on the market produced in or imported to the Republic of Croatia [21]. Given the "bottom-up approach" regarding taxation, the calculation basis for CO₂ emissions is energy sources with potential CO₂ emissions before consumption, while the taxpayers are producers and importers, respectively, suppliers.

According to the EU ETS regulation, the share of the energy available on the market intended for the energy, industrial, and partially transport sector is taxable. According to the German model, the entire transport and heating sector are taxable too, but the share intended for general consumption is non-taxable (for now). Exceptions are possible in all of the listed categories in both directions. Something in the taxable category can be proclaimed as non-taxable and vice versa. Overlaps, i.e., double-taxed items, are also possible, so the results of accounting items are approximate or indicative [13]. The taxation of CO₂ emissions resulting from electricity production is particularly problematic. In 2019, hydroelectric power plants in the Republic of Croatia produced 5854 GWh of electricity; wind farms produced 1461 GWh, and other renewable sources 157 GWh of electricity. The electricity produced from renewable energy sources would be tax-free. However, the available electricity source is unknown, i.e., it is unclear whether domestic or imported electricity has been produced from renewable energy sources or not. Thus, a practical solution in electricity production is a mixed CO₂ emission factor. It is being determined annually at the national or local level, based on the amount of electricity produced in thermal power plants, heat-only plants, and biomass power plants. The measured emission intensity is expressed in gCO₂/kWh. This value is subsequently corrected using the parameters of emission intensity and quantity of produced or imported electricity (the value of emission intensity from renewable energy sources is frequently 0). In 2019, the electricity emission factor amounting to 131 gCO₂/kWh was applicable in the Republic of Croatia [24]. Energy sources with low-carbon or carbon-neutral emissions, implying fuel whose production consumes the same amount of CO₂ that will be emitted later, should also be tax-free. Carbon neutral emissions do not change the concentration of CO₂ in the atmosphere, but substances of natural origin are just returned to their original environment. Stimulating such energy sources is valuable during the transition period until reaching an energy zero-tolerance to carbon. General emission factors are typically used in upstream taxation because the final destination of the available fuel is unknown. Emission factors differ across the energy, industrial, and transport sectors, and those differences are so numerous, even falling to the final consumer level. There are likely no two industrial plants or vehicles with the same emission factor. Downstream taxation would be the fairest but very complicated at the same time. However, it cannot be ruled out the possibility to modify general emission factors of the same energy sources in each taxable sector. Emission factors change over time, decreasing with each improvement and modernization and increasing if carelessness and neglect appear. Fiscal policy may also prescribe the taxation of other greenhouse gases, whose emissions are expressed as CO₂ equivalent emissions (CO₂eq) and added to CO₂ emission values. The coefficients presented in Table 1 apply to the most important of these.

Table 1: Emission coefficients of the most important greenhouse gases for conversion to CO₂eq emissions

Emission coefficients for CO ₂ eq
CO ₂ = 1
CH ₄ = 25
N ₂ O = 298

Source: [25]

This means that an equivalent amount of CO₂ is obtained by multiplying the amount of other greenhouse gas by the relevant coefficient. All greenhouse gases participate in the total amount of CO₂ equivalent emissions with roughly about 20% [26].

3. RESULTS

Sources of total available energy are presented in Table 2.

Table 2: Sources of total available energy in the Republic of Croatia in 2019

Energy source (10³ t)	Total available energy (A)	General consumption (B)	Calculation of CO2 emissions – Total (A-B)
Coal and coke	719	7	712
Refinery products	3365	330	3035
Motor gasoline	478	8	470
Diesel fuel	1855	176	1679
Extra-light fuel oil	111	87	24
Fuel oil	88	0	88
Other refinery products	699	1	698
Liquefied gas – LPG	134	58	76
Natural gas (10 ⁶ Nm ³) ^a	2908	834	2074
Electricity (GWh)	16572	12270	4302
Steam, hot and boiling water (TJ)	10295	7200	3095

^aNm³ – a cubic meter of natural gas in the conditions of normal atmospheric pressure and temperature

Source: [21]

The table presents the amount of energy in different units of measurement. Calculation of the taxable amount of total available energy requires that all items are expressed in TJ, multiplying them by conversion factors. Then, the values obtained are multiplied by CO2 emission factors to get the total amount of CO2 for taxing (expressed in tons). National energy conversion factors and CO2 emission factors are presented in Table 3.

Table 3: National energy conversion factors and CO2 emission factors in 2019

Energy product (10³ t)	National conversion factors (GJ/t)	National CO2 emission factors (tCO2/TJ)
Coal/coke/accounting value	24.28/29.31/26.80	94.60/107.00/100.80
Refinery products-lubricants/refinery gas/acc. value	33.50/42.60/41.41	73.30/57.16/74.36
Motor gasoline	44.59	69.30
Diesel fuel	42.71	74.10
Extra-light fuel oil	42.71	74.10
Fuel oil	40.19	77.10
Other refinery products – oil [29]	42.40	73.30
Liquefied gas – LPG	46.89	63.10
Natural gas (10 ⁶ Nm ³)	34.64 GJ/10 ³ Nm ³	56.10
Electricity (GWh)	3.6 TJ	36.38
Steam, hot and boiled water (TJ) [30]	/	100.69 ^b

^aaccounting value – mean value of the factor for coal and coke and mean value of the factor for 10 refinery products

^bCroatia – average

Source: [28]

The interpretation of the results of total emissions of individual energy products requires being aware of their calorific values, presented in Table 3 as conversion factors. The total taxable energy and CO₂ emissions are shown in Table 4.

Table 4: Total taxable energy and CO₂ emissions in the Republic of Croatia in 2019

Energy product (10³ t)	Energy (TJ)	CO₂ emission (t)
Coal/coke/accounting value	19081.60	1923452.20
Refinery products-lubricants/refinery gas/acc. value	125679.35	9345516.40
Motor gasoline	20957.30	1452340.80
Diesel fuel	71710.09	5313717.60
Extra-light fuel oil	1025.04	75955.46
Fuel oil	3536.72	272681.11
Other refinery products – oil	29595.20	2169328.10
Liquefied gas – LPG	3563.64	224865.68
Natural gas (10 ⁶ Nm ³)	71843.36	4030412.40
Electricity (GWh)	15487.20	563424.33
Steam, hot and boiling water (TJ)	3095	311635.55
Total	365574.5	25683330

The table shows the calorific value of an individual energy product that can be estimated only after conversion to the same quantitative and energy unit. By switching to more environmentally friendly fossil fuels, consumption can be higher due to a lower calorific value, which should also calculate, including higher CO₂ emissions despite a lower emission factor. If the proposed German (market) model of taxation of CO₂ emissions – in line with the EU ETS regulation – were to be introduced in the Republic of Croatia, the following calculation would be applied, using the average global unit price of tCO₂ at the current exchange rate (€1 = HRK 7.5):

$$25\,683\,330\text{ t} \times 22\text{ €/t} = €565\,033\,911.86 \times 7.5 = 4\,237\,754\,338.95 \sim \text{HRK } 4.24\text{ billion} \\ (1)$$

Gross domestic product (GDP) for 2019 amounted to approximately HRK 402.337 billion [31]. For 2019, the total revenue from the CO₂ emission tax would amount to around 1.05% of GDP.

4. DISCUSSION

Based on the scientific knowledge on climate change, political initiatives, and public debates, the introduction of a carbon tax is a necessary measure that is, according to many, long overdue. In addition, this tax is a significant source of budget revenue, and it generally amounts to about 1% of the national GDP, 5% of which constitutes the tax administration cost [15]. Due to simplicity, taxpayers would generally be companies and suppliers that place fossil fuels on the market. Thus, the processes of upstreaming fuel production would be taxable following the EU ETS regulation and the market model [13]. Meanwhile, the special tax on motor vehicles would not change unless the state decided to finance this tax from carbon tax funds, which is unlikely. Such a decision would be opposite to environmental education, but it would slow down the increase in fuel prices [13]. CO₂ emissions should be taxed at the same rate regardless of the emission source and location [15].

Compared to natural gas, coal combustion release roughly twice as much CO₂, while the CO₂ amount released by liquid, oil-based fuel combustion is 50% higher than natural gas (where methane predominates) [23]. Although the original intention was to use tax revenues to invest in research and production of environmentally sustainable energy sources, currently, the financing of tax burdens on labor and capital accumulation is also being seriously considered. The reduction of taxes on income and salaries, dividends, capital gains, and the return on capital investments would free up space for the growth of the general consumption of citizens and consolidation and more stable operation of enterprises. A carbon tax is a desirable combination for meeting environmental and fiscal goals. Given that significantly great resources are required, there is a real danger of compensating and financing an unproductive sector from this fund in poor and troubled economies [15]. The specificity of this tax lies in its purpose, a permanent suppression of its source of revenue. It follows that it would eventually be abolished with the progression of the transition to clean forms of energy. Therefore, financing the fiscal goals carry a specified risk that can lead to significant budgetary difficulties in case of an irresponsible investment or compensation. Comments that the EU Member States do not have total control over environmental taxes, as the maximum emission amounts agreed upon at the Union level, are justified, increasing the risk of irresponsible fiscal policies by the Member States. Based on available data and the trend of carbon tax introduction in an increasing number of countries of the European Union, the tax will probably be introduced in the Republic of Croatia as well. The model of obtaining emission permits at market conditions and trading in them seems the simplest and the fairest. The impact of politics on CO₂ unit values at the level of the European Union could damage the poorest countries of the Union the most. The countries, currently the richest, were able to pass through the transition to the post-industrial era without such levies. Therefore, the dynamics and achievements in the decarbonization process are not the same in all countries. So the deadlines and values of the CO₂ unit price should not be the same either. Significant funds from potential carbon tax revenues could increase the quality of life through a clever and balanced fiscal policy and investment in renewable energy sources. Instead of being covered by the United Nations Framework Convention on Climate Change (UNFCCC), the maritime transport sector is dealt with by the International Maritime Organization (IMO), which has not accepted decarbonization deadlines [32]. Considering sustainable maritime transport's significance in climate change, lowering regulating institutions to a lower level is inexplicable. Given that the source of half of the total emissions in maritime transport is vessels in ports, at berths, and anchors, port cities have both the opportunity and the responsibility to modernize the techniques and equipment in ports by using the funds of the future carbon tax. Port cities can become the first in achieving the set decarbonization goals in maritime transport by 2050 [1]. Slowing down climate change is expected to increase economic growth, improve health, modernize infrastructure, and accelerate innovation [33].

5. CONCLUSION

The introduction of a carbon tax is a justified and logical consequence of sustainable development policies and set decarbonization goals in response to anthropogenic causes of global warming and other climate change. The market model for obtaining emission permits seems to be the best form of valorization of the CO₂ emissions. The *upstream* taxation model is simple and acceptable. Tax revenues are generous and amount to about 1% of the GDP, allowing reductions of other tax burdens and investment in renewable energy sources. Lower CO₂ unit prices and extended adjustment deadlines would suit the Republic of Croatia as a country in transition. Taxation of CO₂ emissions from waste and emissions of other greenhouse gases is not clearly defined yet.

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REVISION OF THE GOVERNANCE MODEL FOR PORTS OF REGIONAL SIGNIFICANCE IN CROATIA - PORT OF HVAR

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ABSTRACT

The continuous growth of passenger and vessel traffic in the port of Hvar in correlation with the limited reception capacities of the port infrastructure, the complex concession relationship between the grantor and the concession holder, and the possibilities for increasing revenue, highlights the need for an analysis of the effectiveness of the current management model of the competent port authority. This paper aims to investigate the justification of the centralized model of the county port authority (CPA) regarding the governance of the port of Hvar and its potential conversion with the decentralization of management or the application of centralized management based on branches. These arguments are based on the specifics of the current governance model, characterized by disputable effectiveness in monitoring the activities of the concessionaire in the port area and operational deficit, aiming to maximize the fundamental revenue items of the CPA, i.e., port fees and concession revenue. A comparative analysis of the annual financial plans and reports of the existing concessionaire and the county port authorities managing the ports of Hvar and Rovinj indicates that the financial result, measured by the unit of realized revenue in terms of the number of port calls and passengers, is three to four times higher in the port of Rovinj. In that port, governance is based on the decentralized model of the county port authority, so this model is one of the possible causes of better performance. In efforts to increase the efficiency of governance, optimization and rationalization of operations, it is necessary to consider the revision of the current public governance structures of the competent port authorities and the application of alternative governance models.

Keywords: county port authority, governance models, port of Hvar, concession revenue

1. INTRODUCTION

Located on the southwestern part of the island of Hvar, the town of Hvar is a significant historical and cultural center, and with the entry into the new millennium, it has become one of the leading tourist destinations in Croatia (City of Hvar, 2023). According to the results achieved in 2023, compared to the previous period (2022), there was a 14% increase in arrivals and a 2% increase in overnight stays in the town of Hvar (TZG Hvar, 2023), confirming the attractiveness of the destination and the continuous growth in tourist arrivals over the years. The town of Hvar attributes a large part of its touristic and social prosperity to its quality connection with the mainland and other islands, i.e. the number and frequency of state and non-obligatory public service ferry lines, as well as numerous other tourist arrangements in which Hvar is an essential destination. According to the data of the Agency for the Coastal Maritime Liner Traffic, in 2023, three fast lines with a public service obligation, eight fast lines without

a public service obligation and one ferry line via Stari Grad (AZOLP, 2024) connected Hvar. Besides numerous significant landmarks that symbolize the globally renowned destination today, the port of Hvar is an essential resource for the socio-economic development of the entire area, and represents a link in the realization of numerous tourist ventures and activities, i.e. meeting demand with limited reception capacities. This disparity, which reflects the inadequate capacity of the port to meet the growing demand for the use of available berths and the quay, especially during the peak summer season, is the main driver of congestion in the harbour. This especially relates to the increased intensity and dynamics of the vessel calls, but also represents the potential cause of maritime accidents due to increased traffic on the main fairways. The port of Hvar is classified as a port open to public traffic of county significance for the Republic of Croatia, and is under the jurisdiction of the Port Authority of Split-Dalmatia County (NC Hvar, 2023), while it is managed by the concessionaire, the Nautical Centre Hvar (Split-Dalmatia County Port Authority, 2014) (Figure 1). Accordingly, the model of governance the port of Hvar, i.e. the model of the organizing port authorities, is of a public nature, i.e. under the control of the regional self-government unit. This paper aims to point out the necessity of examining the justification of the current governance model of the port of Hvar, which, due to the mismatch between the growing demand for berths and the existing, limiting capacities of the port infrastructure, and the complexity of the concession relationship among the involved entities, fails to maximize revenues from operations. It should be noted that the public bodies managing the regional port system are non-profit legal entities primarily financed from the funds of the founder's budget (Ministry), however, with the diffusion of new paradigms, the functions of the port authorities in terms of the institutional management settings are significantly changing, with increasing focus on achieving strategic objectives of port authorities aimed at generating higher revenues and profits from the provision of services (Notteboom et al., 2022).



Figure 1: Port of Hvar
(Source: Visit-Hvar, 2023.)

2. CHALLENGES OF THE PORT OF HVAR GOVERNANCE MODEL

The area of the port of Hvar is divided into nine zones (Figure 2), constituting three inherent parts of the port area (operational, communal, and nautical part), according to the designated use of the coast (berths), which determine the acceptance of vessels according to criteria of type and purpose, and priority of berthing. The operational coast (south) and the customs passage (north) (shaded in red) are intended for receiving ships in liner passenger traffic, that is, ships on round trips and tenders from cruise ships in international navigation.

The nautical part of the port (shaded in blue) refers to the supply zone and berths for yachts and sailboats, while the remaining part of the quay is categorized as a communal part of the port area (shaded in green) for various purposes, from berths for taxi boats and fishing boats, berths for smaller local boats (Mandrač zone), areas for supplying vessels, areas for berthing boats for commercial purposes, for local boats and the remaining area for berthing yachts, sailboats, fishing boats and other tourist boats (NC Hvar, 2023). An overview of the use of berths in the port area of the port of Hvar indicates the complexity of the limited harbour area and the corresponding port infrastructure, as well as the presence of different types of vessels which presuppose systematic organization and control of the port area as well as navigation safety on the fairways.



*Figure 2: Specification of the Hvar port area
 (Source: NC Hvar, 2023.)*

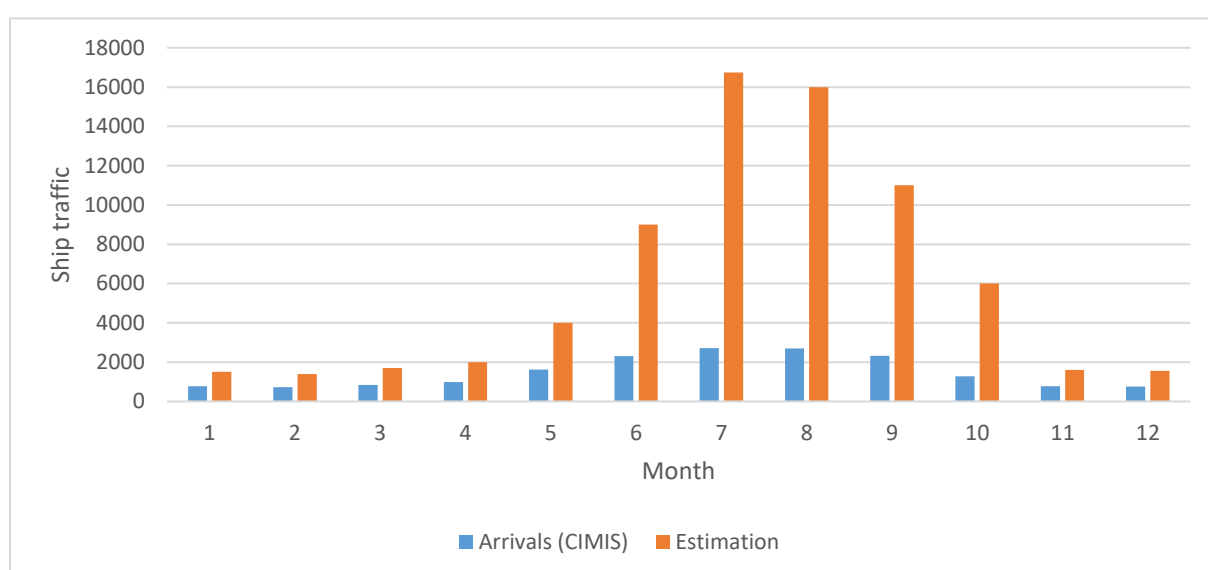
In addition to numerous one-day and multi-day stationary visitors, domestic and foreign boaters, yachtsmen, visitors on tourist boats, and other visitors in coastal liner transport and domestic as well as domestic and international cruises, a significant share of the daily traffic intensity primarily reflects the traffic of liner taxi vessels and other smaller vessels in daily communication with the Pakleni islands and other nearby natural and tourist attractions. Accordingly, the intensity of smaller vessels significantly contributes to the overall traffic density, and due to the impossibility of monitoring them in real-time (they are not required to possess an AIS system), it can be concluded that the total, actual traffic of passengers and vessels is many times higher than the values contained in various statistical reports. The dynamics of passenger and vessel traffic according to the available data of the Harbor Master Office Split and its related branches, on a sample of selected ports of the Split-Dalmatia County, is shown in Table 1. The data indicate impressive indicators of vessel and passenger traffic in the port of Hvar, which, without having a regular ferry line and having predominantly seasonal fluctuations in the intensity of passenger and vessel traffic, achieves total annual values higher than the traffic of the port of Stari Grad, and slightly lower than the port of Supetar.

		2019.	2020.	2021.	2022.	2023.
Split	Arrival of domestic and foreign ships	23,887	13,474	17.008	20,354	21.107
	Departure of domestic and foreign ships	23,892	13,477	17.005	20,376	21.107
	Embarked passengers	3,362,387	1,289,290	2,056,428	2,755,288	2,903,934
	Disembarked passengers	3,275,374	1,252,798	2,013,530	2,695,986	2,820,272
Supetar	Arrival of domestic and foreign ships	6,010	3,957	4,963	5,979	5,876
	Departure of domestic and foreign ships	6,010	3,957	4,961	5,982	5,878
	Embarked passengers	1,018,991	587.609	847,787	1,020,726	1,008,721
	Disembarked passengers	1,043,488	591.212	850.069	1,039,624	1,021,956
Hvar	Arrival of domestic and foreign ships	6,769	2,734	4,906	7,706	7,376
	Departure of domestic and foreign ships	6,770	2,730	4,907	7,705	7,377
	Embarked passengers	989,837	124,705	320,270	567.383	555.283
	Disembarked passengers	1,027,717	160.411	359.019	607.913	583,587
Stari Grad	Arrival of domestic and foreign ships	3,315	1,747	2,461	3,057	3,237
	Departure of domestic and foreign ships	3,316	1,746	2,462	3,059	3,235
	Embarked passengers	384,366	211,850	317,106	378,825	382,445
	Disembarked passengers	399,296	205,977	310,711	380,203	388,689

*Table 1: Passenger and vessel traffic of selected ports in the area of Split-Dalmatia County for the period from 2019 to 2023
 (Source: Harbour Master Office Split, 2024.)*

To determine the total traffic of the port of Hvar, including the traffic of smaller vessels that do not have the obligation to have an AIS system, the ratios and values obtained by visual monitoring of the traffic of the port of Split over a period of one week during the summer (peak) and winter (low) seasons can be applied. Namely, based on the results of monitoring the traffic of smaller vessels, it was found that during the season, the daily traffic of ships in the port of Split can be over ten (10) times higher than formally recorded in the official statistical reports from various data sources (e.g. Port Authority, CIMIS, AIS). In the period of visual monitoring from 17th July to 23rd July 2022, 4,058 ship arrivals were recorded, while for example, the CIMIS database registered a total of 618. Similarly, during the winter period, in the first week of December 2022, 358 arrivals of different types of boats were visually observed, while according to the CIMIS system, the total traffic amounted to 173 (calls) (Lušić and Čosić,

2022). If the values obtained by visual monitoring of the traffic are extrapolated to the annual traffic of ships in the port of Split (arrivals), the estimate of the actual annual traffic in the City Port basin would be over 70,000 arrivals of different types of ships per year (Figure 3). Continuing from the ratios between actual and statistical traffic in the Split port (3.5 times more) and applying the share of that ratio in the Hvar port traffic reduced by 2/3 due to the lower total traffic of ships, the total traffic of the Hvar port can be estimated to be more than 9,000 arrivals of all types of vessels annually (17% more). These values correspond to the lower limit of the estimate while calculating the absolute values assumes the implementation of primary research based on continuous monitoring of traffic on a daily or annual basis. However, it is also important to emphasize the fact about the structure of the mentioned ships, which, if considering the criterion of vessel type, includes not only commercial vessels but also vessels for personal use that are not subject to payment of port tariffs, under conditions that apply to commercial vessels.



*Figure 3: Estimation of the actual annual traffic of the City Port of Split based on two-week visual monitoring of ship arrivals
 (Source: Lušić and Ćosić, 2022.)*

This significantly burdens the harbour area, i.e. the carrying capacity of the destination, as well as the accommodating capacity of the port, regarding the potential to accommodate an appropriate number of vessels according to demand as a variable parameter, and the configuration of the harbour, the capacity of port infrastructure, the width of the fairway, and other fixed variables of the algorithm. Additionally, alongside the aforementioned physical space limitations, the continuous growth of traffic calls into question the effectiveness of the current port governance model, which is based on a centralized model of the competent county port authority (CPA), especially regarding the control and coordination of port activities. Namely, upon the establishment of the county port authority in the Split-Dalmatia County, the legal right from the Maritime Domain and Seaports Act from 2016 was utilized, which prescribed the possibility of establishing multiple port authorities for the governance, construction, and use of county ports (MMPI, 2016), implying the establishment of CPAs based on the subjective perception and interests of the founders in different regions, often in relation to the lack of strict criteria in determining the justification of selecting the relevant model. Generally, the advantages of a centralized system are evident in the better and simpler organization of business services, balancing standards and criteria in maintaining the infrastructure and superstructure of county ports, as well as methods and criteria for charging

port fees, concession fees, and other revenues of port authorities, lower operating costs, but also in the selection of priority investments in selected ports of the portfolio. Conversely, the main drawbacks of the centralized model of county port authorities are evident in the lower success rate of collecting port fees due to the apparent smaller number of port authority employees, a higher proportion of travel expenses in supervisory activities of port authority employees, as well as the reduced possibility of daily visits to ports, the difficulty in monitoring the dynamics and intensity of traffic in the ports of the county port authority's portfolio, and the challenge in disputing the prioritization of investments in certain ports by the local government unit (LGU) (MMPI, 2016). If the aforementioned configurations of traffic growth, technical and technological specifics of the port and the overall area, and institutional governance framework are applied to the port of Hvar, the justification or effectiveness of the current CPA model can indeed be challenged or doubted. In addition to all the highlighted advantages of the centralized model of port authorities, and excluding the fact that the concessionaire for port governance is a company owned by the LGU, the traffic at the port of Hvar, in terms of vessel traffic, is greater than that of the port of Supetar. This, in the context of the success and efficiency of collecting port fees and monitoring the intensity and dynamics of traffic activities, requires the presence of a greater number of concessionaire's (CPA) employees, especially in overseeing the execution of the concessionaire's contractual obligations. Additionally, it is necessary to add the presence of smaller vessels for which there is no adequate supervision, and whose intensity and quantity exceed the technical and organizational capacities of the competent entities. Namely, the concessionaire and the concession holder face numerous challenges in the concession relationship, which are reflected in partially divergent interests, the imperative to realize their own goals, and common goals in achieving the assumed economic results (MMPI, 2016). The primary concession relationship between the port authority and the concessionaire is illustrated in Figure 3.

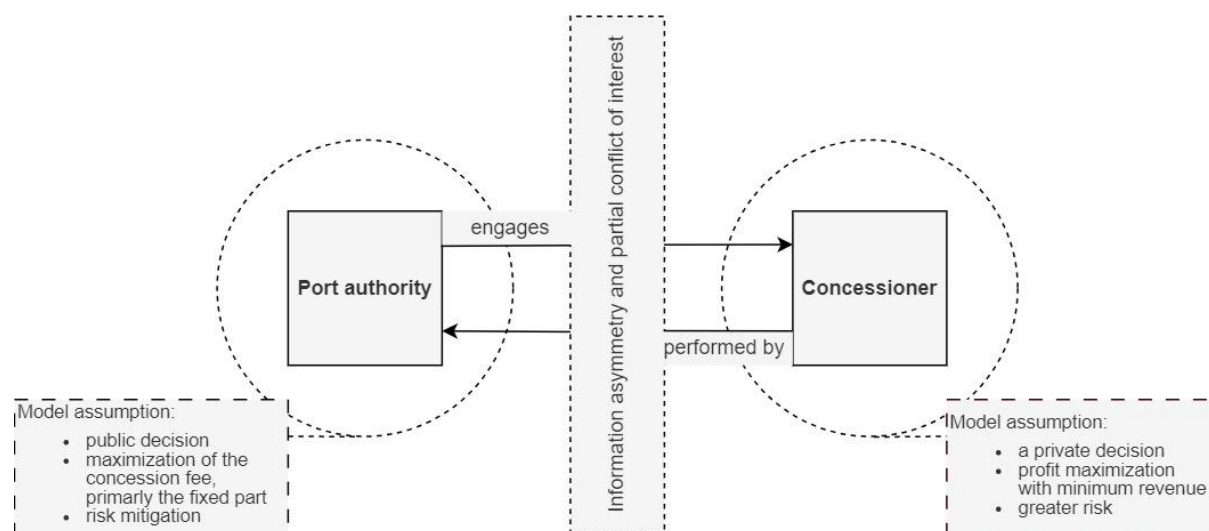


Figure 4: Model of the primary concession relationship between the port authority and the concessionaire
 (Source: MMPI, 2016.)

The concession of the port area in a concession relationship is characterized by information asymmetry, primarily in the context of monitoring the work of the concessionaire, as well as discrepancies in interests and needs of the port authority to increase revenue due to the increase in the variable part of the concession fee, specifically the total relative share of the port authority as business revenue from the concession activity, on the one hand, and increasing the business results of the concessionaire on the other hand.

In addition to the above, it is important to highlight the conflict of interests in the balanced and uniform development of the entire port area as the interest of the port authority, i.e. the improvement of its comparative advantages, competitive strengths, and the achievement of business results of the concession holder, as well as issues related to different risk preferences and distinctions in decision-making between public and private interests (MMPI, 2016).

3. COMPARATIVE ANALYSIS OF THE FINANCIAL "OUTPUT" OF THE PORTS OF HVAR AND ROVINJ

Argumentation for reflection and initiation of analysis regarding the justification of individual governance models of county port authorities can be demonstrated by reviewing the annual financial plans and reports of selected CPAs. It should be noted that certain items in the analysis were estimated due to the limited access and the impossibility of collecting relevant data on the operations of county port authorities. Table 2 shows the revenue of the annual financial plans and reports of the selected county port authorities and concessionaires for the year 2022 in correlation with a specific management model.

SUBJECT NAME		REVENUE PROJECTION (Service fees only)		TRAFFIC		INDEX		GOVERNANCE MODEL
				Ships	Passenegers	Ships	Passenegers	
Port of Hvar	Split-Dalmatia County Port Authority	1,038,960 € (port fees)	1,438,960 €	7,706 (excluding small vessels)	420,443	186.7 €/call	3.4 €/passenger	Centralized
	Nautical Center Hvar	400.000 €* (port fees + other income items)						
Port of Rovinj	Rovinj Port Authority	746,742 €		916	66,394	815.2 €/call	11.2 €/passenger	Decentralized

**estimation based on the financial reports and plans of NC Hvar*

*Table 2: Overview of annual financial plans of selected county port authorities and concessionaires in relation to the governance model of county port authorities in 2022.
 (Source: Split-Dalmatia County, 2023; NC Hvar, 2022; Regional Port Rovinj, 2022; Croatian Bureau of Statistics, 2024.)*

The data from Table 2 indicate that the estimated revenues from the provision of services generated by the port of Hvar are twice as high as those recorded in the port of Rovinj, primarily due to the total volume of vessel and passenger traffic, which is by more than eight (8) and by more than six (6) times higher in the port of Hvar. However, the ratio of revenue per berth and the number of passengers is more than four (4) and more than three (3) times higher in the port of Rovinj compared to the indicators achieved in the port of Hvar for year 2022. Additionally, it should be noted that the analysis of traffic in the port of Hvar did not consider the increased traffic of smaller vessels without AIS systems, which would further increase the ratios measured in revenue per passenger and docking among the considered ports.

4. DISCUSSION

Increasing the efficiency of governance, optimization, and rationalization of operations, and enhancing productivity through the collection of port fees, namely total revenue, which forms the basis of financial sustainability for county port authorities, are the main factors indicating the need to reconsider the current centralized model of managing county ports.

This includes exploring the possibility of establishing alternative governance structures based on a decentralized model or a centralized model of port authorities based on branches (outposts) in managing ports like Hvar and similar county ports where there is justification for revising the institutional governance model. The decision to initiate the process of redefining the model of port authority governance should be based on specific criteria, including revenue and expenditure, growth in traffic, and demand for berths exceeding the capacity of the port and existing human resources, especially in the ports where a centralized governance system is present. It should be emphasized that the draft of the Maritime Domain and Seaports Act proposed a model for managing port authorities based on the establishment of a single port authority with several branches (MMPI, 2014). It is noteworthy that by establishing port authorities based on a model of a single county port authority with several business units, the goals can be balanced, and ultimately all the benefits of centralized management can be achieved, along with certain advantages exclusively characteristic of the decentralization of individual functions of the port authority governance system. Similarly, a decentralized system of port authority governance is already present in the system of port authorities in Croatia, specifically in Primorje-Gorski Kotar County, Istria County, Lika-Senj County, and Dubrovnik-Neretva County, so the same advantages and opportunities, as well as drawbacks and threats of this model of port authority governance, are known. One of the significant advantages of the decentralized management system is the continuous presence of port authority staff in county ports, which is proportional to greater efficiency in collecting port fees and other revenues, as well as more successful monitoring of the intensity, dynamics, and structure of port traffic, along with lower supervision costs (MMPI, 2016). Indeed, the port of Hvar is a representative example of the potential and opportunities for converting the governance model of the current port portfolio in the Split-Dalmatia County area, particularly due to the existing situation characterized by rapid traffic growth and disputable effectiveness of supervision or monitoring of all activities in the concession holder's port area, as well as an operational deficiency in maximizing the fundamental revenue item of the port authority, the collection of port fees. The relations obtained through the review of revenue generated from activities in the ports of Hvar and Rovinj, based on the criterion of port calls and number of passengers, indicate the importance of greater presence of port authority staff in the port of regional significance Hvar, which can only be achieved by implementing one of the two proposed governance models, and the application of which would undoubtedly increase the efficiency and productivity of supervisory and commercial activities, as well as the overall level of navigational safety on approach routes regarding the management and coordination of port activities by competent authorities. By applying the aforementioned port authority governance models, the rapid growth in traffic that exceeds existing physical, material, and human capacities can be annulled, while also ensuring the satisfaction of uniform development with optimization of revenue items. Additionally, besides the need to revise the governance model of individual port authorities that provide legally prescribed services in regional and local ports within the assigned port activities, other possible reasons for the reduced financial efficiency of revenue positions in the examined ports cannot be excluded as a consequence of operational, commercial, social, legislative, or other aspects of port authority operations. These latter areas of operation are also potential causes of declining competitiveness in managing the port of Hvar, but undoubtedly central arguments for future research.

5.CONCLUSION

Due to the continuous growth in the intensity and dynamics of traffic in certain ports of regional significance for the Republic of Croatia in recent years, as well as the limited capacity of port infrastructure, there is a need to revise the existing models of public governance of regional port authorities.

These circumstances precisely characterize the current state of port governance in Hvar, which, with limited port capacities, achieves above-average passenger and vessel traffic. However, with the current governance model and concession relationship that prevents the satisfaction of all needs and business interests of the port authority arising from the activities of the Port Authority prescribed by the Maritime Domain and Seaports Act, there is a need for improvement in the supervision of port activities and maximization of business results. It is recommended to reconsider the justification of the current centralized model of the competent regional port authority and the potential conversion of the same with decentralization of governance or application of centralized management based on branches. By doing so, the long-term sustainability of the system is ensured, as well as greater efficiency in the business results of the body that manages the port.

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STRATEGIC DECISIONS IN THE FUNCTION OF STRATEGIC RISK MANAGEMENT, CASE STUDY OF MARINAS

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ABSTRACT

Nautical tourism is of great importance for entrepreneurship in the Croatian Adriatic. That especially applies to ports of nautical tourism, of which the marina stands out. Croatian marinas have not yet saturated the Adriatic coast, and it is advisable to expect their development. Given that development depends on business success, the business strategy of the owner and management of the marina is crucial for the business result. Revenues from moorings, with around 70% of total revenues, make up the bulk of the revenues of Croatian marinas. The mentioned fact emphasizes the need to research the strategy of dealing with marina moorings. In terms of increasingly frequent unrelenting global crises, the emphasis is on the need for research on crisis sensitivity. Strong shocks of crises, such as COVID-19, highlight the importance of activating strategic risk management. Given that there are two basic strategies for dealing with bonds, the daily bond strategy and the annual contract bond strategy, the question of the importance of strategic risk management was raised. The aim of the research is to analyse the financial differences between a strategy with daily berths and a strategy with annual contract berths in Croatian marinas. For the purpose of this research, a comparative method is used to compare these two strategies. Through methods of analysis and synthesis, the topic is explored in depth and the differences are analysed using the coefficients of strategy usage during the fiscal year. Finally, a conclusion is drawn using the deductive method. Furthermore, the desk research method is applied to explain the sensitivity level of marinas according to their location in the Adriatic Sea. The research results show that the level of threat of strategic risks for Croatian marinas varies depending on their position in the Adriatic Sea. In conclusion, marina management should adjust the use of these two strategies accordingly. Each strategy has a certain degree of sensitivity to strategic risks, and the differences between the northern and southern Adriatic are highly pronounced. The research carried out in this paper deals with the business results of Croatian marinas concerning the strategy of daily moorings and the strategy of moorings on an annual contract, but also takes into account the position of the marinas on the Adriatic coast. The research results showed the (ir)rationality of the strategic decisions of some marinas along the Croatian Adriatic coast. The research showed how much of a difference there is in the business result if we use a daily connection strategy or an annual contract connection strategy. Everything beyond the results of this research shows the degree of hazard acceptance of the owners and management of Croatian marinas.

Keywords: *daily connection strategy, annual contract connection strategy, marina position, hazardous management decisions, strategic risk management*

1. INTRODUCTION

Entrepreneurship, especially small and medium entrepreneurship (SME), is the basis of every national economy. Thinking of an entrepreneurial venture, potential entrepreneurs raise the following question: Work for someone else and have a boss, or start an entrepreneurial venture, be your boss, and take the investment risk? Every entrepreneurial investment represents taking on a risk consisting of internal and external dangers that threaten the success of the investment. Concerning entrepreneurial investment in the Croatian coast, nautical tourism ports, especially marinas, represent an important form of national SME. The emergence of the COVID-19 pandemic has shown that the business of marinas and charters is closely related and interdependent. The development of Croatian charter over the past ten years has promoted Croatian charter to the very top of the world, and Croatian marinas are also at the top of European quality. Concerning the Republic of Croatia, tourism is the basis of the Croatian economy, and marinas and charters are of special importance for the Croatian coast development. The effects of marinas and charters are direct in terms of their business results, but even more important are the indirect effects, including numerous activities that develop under the influence of marinas and charters. The association of marinas and charters, which came to the fore during the COVID-19 pandemic, opened up the business strategy issue, which serves the purpose of strategic risk management. What kind of strategies are involved is the topic of this research. The research focuses on marinas from Istria to the southern parts of Croatia and deals with two business strategies implemented in these marinas. In particular, the strategy of daily berths and the strategy of annual contract berths are compared. In the context of strategic crises affecting the entire marina and charter industry, the choice of one of these strategies is fundamental to business success. Therefore, the roles of all parties involved in crisis situations are examined, especially the relationships between the marina, the charter company, and the state. Concerning the methodology of this research, a comparative analysis of business practices will be applied, which is the result of strategic management that opts for one of the options for dealing with connections. That is, income from moorings makes up the bulk of the marina's income, and therefore, it is necessary to research strategies related to business with moorings. The goal of this research is the valorisation of a specific strategy, as well as the assessment of its resistance to strong crises. The hypothesis of this research is the claim that certain strategic management decisions make marinas resistant to crises, while some other decisions significantly threaten the business and development of marinas. The choice of a strategy with daily berths and/or a strategy with annual contract berths has a significant impact on the business results of operations under strategic risk conditions.

2. STRATEGIC RISK MANAGEMENT

Strategic risk management, as far as Croatia is concerned, is a topic rarely mentioned in management theory but neglected in practice. The reason for this is the underdevelopment of management in the Croatian economy and underdeveloped administration. Young Croatian entrepreneurship, dominated by SMEs, often equates administering with management, leading to an unfavourable management and administration structure. In other words, an entrepreneur is often a manager but also represents the company administration. Such foreign Croatian entrepreneurship can be detected in private Croatian marinas, with the difference from ACI being predominantly state-owned. It means that, for ACI, management is mainly a matter of national politics, rather than expertise and knowledge. The decision to adopt a strategy of daily berths and apply it to all ACI ports in the Adriatic without considering the strategic risks has proven to be a mistake. In contrast, the private marinas have shown a higher level of understanding and appreciation of strategic risks.

In such conditions, the strategic risk management of Croatian marinas is neglected, in addition to the fact that some marinas have spontaneously developed a business that carries a successful form of resistance to high-risk phenomena.

2.1. Definitions and forms of strategic risk

At the beginning of the entrepreneurial project, it is advisable that the entrepreneur, and investor, following the goals, consider the possible foreseen risks on the way to the desired result. It is also advisable to consider the possibility of unforeseen risks, according to which it must adjust its business strategy. Besides the primary business strategy, it is necessary to develop strategic risk management or ensure it by outsourcing. The question arises of what strategic risk management is. Strategic risk is a category of risk observed concerning four elementary risk groups: operational risk, financial risk, reputational risk, and regulatory risk. There are different definitions of strategic risks, for example, Roberts, Wallace, and McClure (2003, 21) describe strategic risk as a relationship with "risk at the enterprise level", which "influences the development and implementation of the organization's strategy". Strategic risks are explained very similarly by KPMG (2010, 7), which says "Strategic risks - those that pose a threat to a company's ability to set and execute its overall strategy – dominate the list of concerns for many companies". In the continuation of its report KPMG (2010, 7) states: "These strategic risks can make the difference between survival and extinction but, in many cases, companies do not have a structured framework for identifying or mitigating them." The definition and explanation of strategic risks were expanded by Deloitte (2013, 4), stating that those strategic risks "those risks that either affect or devolve from business strategy decisions – can strike more quickly than ever before". Thus, a clumsily set business strategy can condition the appearance of strategic risk or can condition the appearance of risk. It results in a negative business result. Strategic decisions, indeed ignoring common and predictable risks, can initiate strategic risk activation. Furthermore, Louisot and Ketcham (2014) state that strategic risks are "associated with adopting or not adopting the correct strategy for an organization in the first place or, once adopting, not adapting the chosen strategy in response to competition or other forces". The before-mentioned definitions, including Deloitte's definition, can connect with Roberts, Wallace and McClure's statement that a frequent example of strategic risk is the risk that arose due to a wrong strategic decision (Roberts, Wallace and McClure 2003, 21). The statement by Roberts, Wallace, and McClure is confirmed in the example of Croatian marinas and the use of incorrect strategies in some marinas, which has put the operation of ACI, for example, in a very bad situation. There have been numerous research and works on the classification of strategic risk. However, it can be essentially divided into two basic types: internal risks and external risks. Various significant risks, that are crucial for strategic risk management and the company's top management, can be categorized under these two groups.

Table 1. Types of internal and external strategic risks

Internal strategic risks	External strategic risks
Change risk: Disruption due to change	Regulatory risk: Compliance and legal rule challenges
Reputation risk: Damage to brand image	Competitor risk: Threat from rival organizations
Governance risk: Issues in organizational governance	Economic risk: Vulnerability to economic fluctuations
Financial risk: Exposure to financial uncertainties	Political risk: Impact of political factors
Operational risk: Hazard in day-to-day operations	

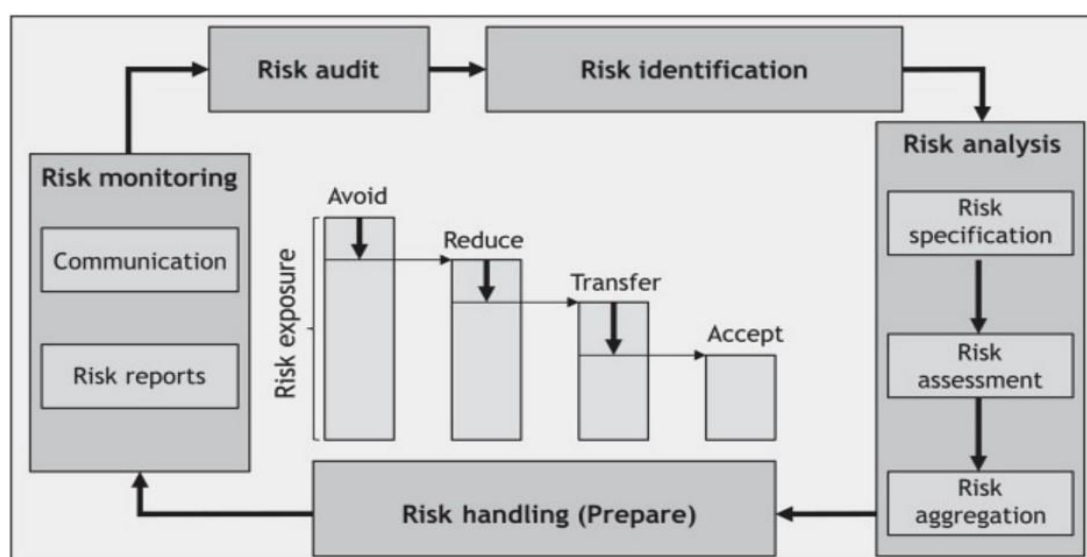
Source: created by authors of the text.

Therefore, it is necessary to view strategic risks through the previously mentioned two fundamental groups of risks and the numerous risks inside these two groups. It is common for managers to devote their time to the constructive aspects of their role. At the same time, strategic risk management's role is to assist the manager in achieving goals, which closely relates to *controlling*. As the research and survey results show, helping to achieve goals is the second most pivotal role of strategic risk management. However, in practice, it is somewhat different because much of the attention focused on risks refers to preventive activities, such as supervision and monitoring the development of a risky situation.

2.2. External and internal strategic risks of marinas

The results of the strategic decisions of marina management are affected by external and internal strategic risks like all the other companies. Regardless of whether they are external or internal, we must approach risks and deal with them methodically. Conducting risks extends from recognizing and assessing the strengths and damages that the risk entails to taking the risk and managing it.

Picture 1: General risk management process



Source: Taylor & Francis, chapter Louisot, & Ketcham: "The Routledge Companion to Strategic Risk Management", Routledge Companions, 2014,
www.google.co.uk/books/edition/The_Routledge_Companion_to_Strategic_Ris/IDFEDwAAQBAJ?hl=en&gbpv=1#pli=1 (February 9, 2024).

As far as marinas are concerned, external strategic risks refer to risks that affect the current or planned environment in which a product or service of the marina develops. For example, the marina is developing the technology of taking over lubricating motor oils, which significantly burdens the finances of the marina. It refers to oil collection systems, as well as patents that some marinas often develop for themselves. But, on the other hand, in conditions of advanced technology, solar-powered vessels can appear, which reduces the problem of engine oil disposal. It led to a decline in commercial interest in new patents and lube oil retrieval technology, putting the marina business in a completely different position from the expected one. Therefore, the development of technology could cause new products to become obsolete very quickly, and investment in a new product would remain without business success. It could lead the marina to serious financial difficulties, loss of income, and loss of business reputation.

External risks are within four elementary risk groups, which affect Croatian marinas that have to withstand damage from external risks (Godfrey, Lauria, Bugalla, and Narvaez, 2019, 34):

a) **Regulatory risks** represent a group of risks occurring due to legislation.

In Croatia, regarding marinas, this refers to laws and by-laws that directly and indirectly affect marina operations. The appearance of regulatory risks is rare in developed countries and economies, but it is present and frequent in economies in transition. For example, the Croatian marina industry is very vulnerable to the emergence of regulatory risks due to frequent and unfavourable changes in the law. It specifically applies to the Law on Maritime Property and Sea Ports (2023) and the system of marina concessions, as well as the inappropriate way of taxation. Considering the situation in Croatia, the regulatory risk for marinas is high.

b) **Competition risks** represent risks arising from a better or similar service or competitor's product.

Concerning Croatian marinas, we can refer to competing Italian and Slovenian marinas as competition risks, especially in the border area. Nevertheless, Italian marinas get significantly less booked than Croatian ones. The beauty of the Croatian coast, better quality of marina services, and relatively more favourable prices are the reasons for this. It means that the risk of competition for Croatian marinas is low for now, but such a relationship can change for various reasons. Therefore, regardless of the current situation, it is necessary to monitor the competition risks constantly.

c) **Economic risks** belong to the group of more difficult-to-predict risks. Harder predictability is associated with threats that occur unexpectedly.

However, the question is whether we can overlook the upcoming threats and risks. For example, we deal with earthquakes, pandemics, floods, wars, and other calamities that leave behind enormous financial losses. A good example is COVID-19, which has affected all world economies. At the same time, some countries, thanks to controlling science, have successfully prepared. It has helped respected companies to introduce and develop predictive management, such as SAP (Lebefromm, 2021). Croatia found itself in a group of countries that did not prepare for the upcoming risk of COVID-19, which affected the nautical tourism industry, especially charter and some marinas. This paper will further discuss the question of what this refers to.

d) **Political risks** arise from changes in government policies, regulations, and geopolitical events, such as wars or security instability. Political risks can affect companies operating in their country and abroad.

As for Croatian navies, the political risk is twofold. In other words, the unstable political situation in Croatia and the instability introduced by boaters, bringing with them the political problems of their countries, affect the marinas. As is well known, political issues also occurred in developed EU countries, not only in transitional ones. The reason for this is the global political turmoil all over the world. All this directly affects Croatian navies, which have to defend themselves against damage from political risks with a business strategy.

Five elementary groups of internal risks affect Croatian marinas, but there are significant differences between marinas. On the other hand, external risks tend to affect all Croatian marinas relatively equally. This difference in the impact of internal versus external risks has led to the identification of two distinct groups of marinas, which will be the focus of further research.

The internal strategic risks affecting Croatian navies are as follows:

- a) **Change risk** represents risks arising due to changes within the company's organization.
When it comes to Croatian marinas, a change in top management most often leads to a turnaround in the way of managing the marina. The time in which the entire crew of the marina adapts to the new manager is the time for the occurrence of internal risks. That also applies to changes in the captain of the marina, which conditions changes in the operational marina and opens up the possibility of internal risk.
- b) **Reputation risk** occurs when certain problems affect the image of the company.
In the marina business, reputation risks lead to a decline in the image of the marina due to various reasons. For example, discourteous treatment of sailors at the reception desk, the heart of the marina, can lead to a decline in the marina's image. Boaters are particularly sensitive to cleanliness and safety in the marina, which can also reduce the image of the marina.
- c) **Governance risk** arises as a result of making wrong management decisions.
Wrong decisions that can cause damage to the business and work of the marina can happen at all levels of management. Top management or captain's misguided decisions can be dangerous and harmful to the marina.
- d) **Financial risk** can occur as a result of all other risks. Therefore, they could be called "result risk". Financial risk is only significant when caused by poor management or unfavourable circumstances. It is often associated with risky decisions "in day-to-day operations".
- e) **Operational risk** occurs as a risk of loss, so it turns into a financial risk. It arises from mistaken internal or external actions of the organization (Study.com, 2024). These processes are often part of the organization's regular operations, called "hazards in day-to-day operations".
In the marina business, operational risks are not common, but they can arise, for example, when dealing with daily moorings. Connection problems often occur when the marina captain overlooks a full marina due to an oversight. That ultimately results in a loss of image or financial loss for the marina.

Concerning the occupancy of Croatian marinas in conditions of a major crisis, such as COVID-19, there were significant differences between marinas in Istria and those that are south of Istria. Croatian marinas in Istria were less exposed to unfavourable results than those in the south. In addition, the distinctions between ACI marinas and private marinas in Istria were apparent. Thus, we will investigate the damage occurring in private and state marinas concerning the strategic decisions made by management. The marina's location on the Croatian coast will be considered as well.

2.3. The sensitivity of marinas' strategic risk management

Strategic risk management is a special subtype of management that is closely related to controlling. There are numerous definitions of strategic risk management. Harvard Law School states that "strategic risk management" can be defined as "the process of identifying, assessing and managing the risk in the organization's business strategy—including taking swift action when risk is actually realized". It is emphasized that "strategic risk management is focused on those most consequential and significant risks to shareholder value, an area that merits the time and attention of executive management and the board of directors".

Moreover, Frigo and Anderson (2011, 22) state: "Strategic Risk Management is a process for identifying, assessing, and managing risks and uncertainties, affected by internal and external events or scenarios, that could inhibit an organization's ability to achieve its strategy and strategic objectives with the ultimate goal of creating and protecting shareholders and stakeholder value. It is a primary component and necessary foundation of Enterprise Risk Management." To better explain strategic risk management, Frigo and Anderson (2011, 22) state six points that define the basic principles of ERM:

- 1) It is a process for identifying, assessing, and managing both internal and external events and risks that could impede the achievement of strategy and strategic objectives.
- 2) The ultimate goal is creating and protecting shareholder and stakeholder value.
- 3) It's a primary component and necessary foundation of the organization's overall enterprise risk management process.
- 4) As a component of ERM, it is by definition effected by boards of directors, management, and others.
- 5) It requires a strategic view of risk and consideration of how external and internal events or scenarios will affect the ability of the organization to achieve its objectives.
- 6) It's a continual process that should be embedded in strategy setting, strategy execution, and strategy management.

Therefore, management decisions must respect the suggestions of strategic risk management, which makes companies less sensitive to threats. A good example is private Croatian marinas observed in the crisis of the COVID-19 pandemic, where the strategic decisions of management and owners determined the degree of sensitivity to the threat. When analysing the management behaviour of Croatian marinas, including those that offer charters, the issue of strategic risk management becomes more complex than it seems. That is, it turned out that some strategic business decisions of the management are extremely sensitive to threats. At the same time, it is important to consider the marina's location on the Croatian coast of the Adriatic.

3. MARINAS' STRATEGIC DECISIONS AND STRATEGIC RISK MANAGEMENT

The development of Croatian marinas and charters has been successful despite the low level of marina management caused by an unfavourable business environment. In Croatia, e-technology is relatively underdeveloped, research is undervalued, and *controlling* is almost unknown. Marinas and charters are crucial to the development of the Croatian Adriatic coast. Croatia boasts the world's largest charter fleet. The Croatian charter fleet has officially registered 4,378 yachts and boats.¹ According to official data, 2,762 charter companies are registered in Croatia in 2019, of which 930 are active.² It is reported that active charter companies in Croatia rent out 1,956 boats, 2,166 sailing yachts and 256 motor yachts, totalling 4,378 yachts and boats, which accounts for 40% of the world's charter fleet..³ Concerning the number of boaters' nights spent on charter, Split-Dalmatia County is the most represented, with 45% of charter nights (Croatian National Tourist Board 2019, 7). The development of the charter continued upward until 2020 when the COVID-19 pandemic halted development. At the same time, the COVID-19 pandemic has shown numerous problems in the marina-charter-state relationship. The onset of the pandemic in 2020 unexpectedly hit Croatia's tourist season, which opened up numerous issues for the marina and charter industry. The connection between marinas and charters was quickly understood, which shaped the term *marina business* in research (Luković and Piplica 2020, 120–130).

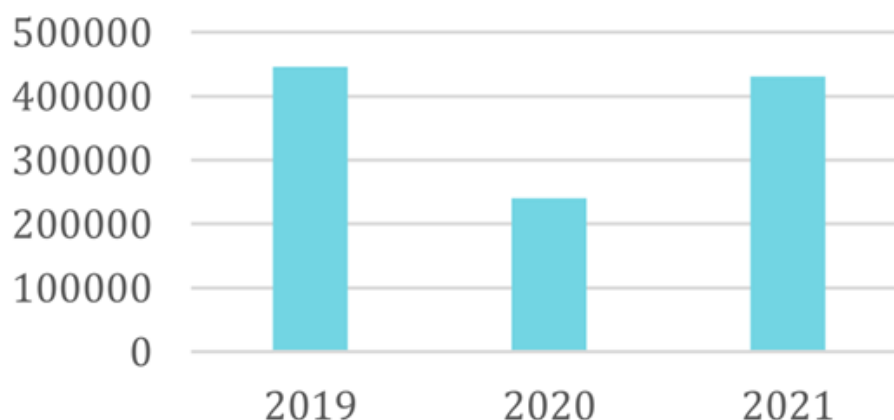
¹ World News: Hrvatska ima najveću čarter flotu na svijetu: čak 4378 jahti i brodica za iznajmljivanje (theworldnews.net) (December 27, 2023).

² Original data from the Ministry of the Sea, Transport and Infrastructure in the Republic of Croatia (December 27, 2023).

³ 40% svjetskih plovila za najam drži - hrvatski čarter - Monitor.hr (January 9, 2024).

The Croatian Government found itself in the problems of saving large economic systems and the safety of citizens, and aid to marinas and charters was almost completely absent. In such conditions, the Croatian charter found itself in an extremely difficult situation in 2020.

Chart 1. Charter guests on the Croatian Adriatic (2019 to 2021)



Source: "Nautički čarter u Hrvatskoj 2021. Pregled stanja i trendova 2021 – što smo naučili?" (translation: *Nautical charter in Croatia 2021. Overview of the state and trends in 2021 – what have we learned?*), Čarter.hr. www.carter.hr/documents/nauticki-carter-u-hrvatskoj-stanje-i-trendovi-2021-sto-smo-naucili.pdf (February 9, 2024).

Under the influence of the pandemic, the guests' arrival and renting of Croatian vessels and charters, more than halved in 2020. As stated: "At the start of the pandemic, all pre-season reservations were cancelled, and gradually, those for July and August were cancelled as well. Until June, not a single charter company had a new booking request. The total number of charter guests fell by 65%, so in the first seven months of this year, 112,810 charterers visited us, while in the same period last year, that number was 317,700."⁴ The number of charterers in northern marinas, such as Punat Marina or Verude Marina, has decreased by 54%. Charterers in Dubrovnik or Agana marinas experienced an 85% drop during the same period. Central Dalmatia (Šibenik and Zadar) accounted for 45% of traffic in 2019.⁵ The following text will explore the implications of this for the Croatian marines. Marinas, as the primary segment of the marina business, are crucial factors in the economy of the Croatian coast. In 2020, 64 marinas of all categories were registered, both old (1-3 stars) and new (1-4 anchors). Of the total number of Croatian marinas, the ACI system of marinas is predominantly state-owned and has 22 marinas. The remaining 42 marinas are under private ownership. Nautical tourism ports, mostly marinas, operated on 4,593,435 m² of water area and had 18,625 berths.⁶ Due to the State Bureau of Statistics reports not distinguishing between marina berths and other nautical tourism ports, a special survey was carried out. This research, conducted in 2019, showed that of the 18,179 berths of the ACI nautical tourism port⁷, there are 5,882 berths in 22 marinas, while 39 private marinas have about 9,800 berths (Anić, Gjurković and Luković 2021). The information can be transferred to 2020. ACI remains an essential entity in Croatian marinas, but it is no longer the dominant one due to the domination of private commercial marinas.

⁴ Croatian Chamber of Economy, „Nautika u srpnju dosegla 75% lanjskih dolazaka“, www.hgk.hr/nautika-u-srpnju-dosegla-75-posto-lanjskih-dolazaka (February 9, 2024).

⁵ Croatian Chamber of Economy, „Nautika u srpnju dosegla 75% lanjskih dolazaka“, www.hgk.hr/nautika-u-srpnju-dosegla-75-posto-lanjskih-dolazaka (February 9, 2024).

⁶ Croatian Bureau of Statistics, *Nautički turizam, Kapaciteti i poslovanje luka nautičkog turizma 2020., Priopćenje* (translation: *Nautical tourism, Capacities and operation of ports of nautical tourism in 2020, Press release, Zagreb 2021*)

⁷ Croatian Bureau of Statistics, *Nautički turizam, Kapaciteti i poslovanje luka nautičkog turizma 2019., Priopćenje* (translation: *Nautical tourism, Capacities and operation of ports of nautical tourism in 2019, Press release, Zagreb 2020*).

The onset of the COVID-19 pandemic found the marina business (marina and charter) companies unprepared. Marina owners and management made strategic decisions to defend against the COVID-19 pandemic in 2020. These are two different business strategies assuming the role of strategic risk management. It is necessary to state the fundamental characteristics of the subject under investigation to comprehend their importance. The marina was divided into two risk groups based on two strategies:

- a) Berths in transit
- b) Contract berths

Although, at first glance, the differences do not appear to be significant, the COVID-19 pandemic has shown that these are still important differences. Each of the mentioned strategies showed significant differences in risk sensitivity, and, thus, differences in business results.

4. STRATEGIC SENSITIVITY AND MANAGEMENT DECISIONS

Under the influence of COVID-19, it turned out that the strategy of contract bonds has a built-in high level of strategic risk management. Therefore, sensitivity to threats and poor business results divided marinas due to two strategies of Croatian marinas. Below, we will analyse other factors that should be considered. They are all important, but developing a business strategy involves higher or lower degrees of strategic risk.

4.1. Research methodology

Researching the sensitivity of Croatian marinas to strategic risks requires the development of a methodology to thoroughly investigate this phenomenon. According to the set goal and hypothesis, it is necessary to use a comparative analysis of the results in order to show whether and to what extent the strategic decisions of marina management are justified and under what conditions. This comparison includes two strategies: (1) the strategy of marina operations with transit berths, and (2) the strategy based on contract berths. In order to compare these two strategies, it is first necessary to use statistical analysis methods to calculate the success of these strategies under non-crisis conditions. Then, through assessment methods based on the analysis and results of the active operating time of the marinas, the coefficients of time usage of the berths are determined. Accordingly, the results of the two strategies are compared: (1) the strategy of marina operations with transit berths, and (2) the strategy based on contract berths. These results represent the difference in business results and strategy use in non-crisis conditions, but during the active operation time. The next step arises as a research requirement stemming from the hypothesis that requires an analysis of the business results of the two strategies under the conditions of a severe strategic crisis, such as the COVID-19 pandemic. Therefore, using the sample method, the business results in the crisis year 2020 in marinas of northern, central, and southern Adriatic are analysed. This will provide the desired answer about the degree of strategic sensitivity of marinas along the Croatian Adriatic as well as the correctness of management decisions. Certainly, the question arises about the willingness of management to make risky decisions that may border on gambling, which could be due to personal preferences or insufficient knowledge. In relation to the ACI marina chain, the research provides an insight into the correctness of setting strategies for all marinas regardless of their location on the Adriatic, which should assist management in future strategic decision-making.

4.2. Economic profitability analysis of two marina strategies

The marina's owner decides whether operations should focus on contracted berths or berths in transit and then passes it on to the management. Numerous studies prove that revenues from berths together with service in marinas are, as a rule, positive, while all other content comes as

a necessity and a matter of the marinas' goals and strategy. Lower-category marinas do not develop additional facilities and are content with profits from berths. High-category marinas develop numerous facilities that maintain a higher level of purchasing power for boaters, regardless of whether the marina's facilities are on the verge of profitability or negativity (Luković and others 2024). Moreover, regardless of the category, the berths' prices are similar during the season in all marinas. That makes it easier to comprehend the importance of the marina's berth management strategy. Therefore, the berths' business and strategy is the primary problem of the marinas' direction. It is necessary to calculate to show the differences in business results between the two strategies mentioned above. Two marinas in the northern Adriatic (Punat and ACI Pomer) and two in the south (Frapa Dubrovnik and ACI Dubrovnik marina) were analysed.

Table 1. Average price of moorings for the 2023 season according to the criterion of time of use, sample: vessel 12-13 m, (in euros)

Marina	Annual	Monthly	Daily	Converted into daily berth (365/30) and daily berth profitability index				
				Annual (365)	Index Dn/Go	Monthly	Index Dn/Mj	Daily
Punat	8.354*	None	120	22,9	524,0	None	-	120
ACI Pomer	5.986	1.064	98	16,4	597,6	35,5	276,1	98
ACI Dubrovnik	6.834	1.450	100	16,4	597,6	48,3	294,7	100
Frapa Du	6.880	1.084	88	18,8	468,1	36,1	243,8	88

Source: official prices of marina berths, taken from the Internet.

*Note: *Marina Punat – the price of an average berth of a vessel of 12-13 m because there are 3 categories of berths.*

Basic orientation for the daily berth business strategy was obtained by recalculating the prices of daily berths. As can be seen from the calculation, if the annual berth is converted into a daily berth, then the price of a daily berth in the Punat marina is 424% higher than the converted price of a daily berth from an annual berth. At the same time, ACI, which decided on a business strategy with daily connections, achieves a positive result per connection of as much as 497.6% at all its marinas. Marina Frapa Dubrovnik, which in Rogoznica and Dubrovnik opted for a strategy of operating with berths on an annual contract, set the prices of daily berths, which in the calculation are higher by “only” 368.1%. In the following, it is necessary to answer the question of what the daily connection strategy looks like following the seasonality of the marina. Considering that the marina business starts from Easter and ends at the end of October or the beginning of November, it is necessary to correct the performance of daily berth prices by about 50%.

Table 2. Average berth prices in 2023 with regard to seasonal occupancy (in euros), sample: vessel 12-13 m, (in euros)

Marina	Converted into daily berth for 6 months and daily berth profitability index						Daily to annual 50% (365)	Annual by contract	Index Dn/god
	Annual	Correction	Monthly	Correction	Daily	Correction			
Punat	22,9	11,5	none	none	120	60	21,900	8.354	262,2
ACI Pomer	16,4	8,2	35,5	17,8	98	49	17.885	5.986	298,8
ACI Dubrovnik	16,4	8,2	48,3	24,2	100	50	18.250	6.835	267,0
Frapa Du	18,8	9,4	36,1	18,1	88	44	16.060	6.880	233,4

Source: recalculated by the authors from official marina berth prices, taken from the Internet.

Despite the 50% reduction in prices and revenues due to seasonality, the business model of daily berths remains profitable.

Compared to the prices of the annual berth, the recalculated prices and the revenues calculated from them, despite the seasonality, generate higher revenues by 133.4% at Frapa Dubrovnik and up to 198.8% at ACI Marina Pomer. A new research question is raised related to the profitability of contract strategies and daily connections according to the position of the marina.

4.3. The marina position and the strategy choice

The previous calculations confirmed the justification of choosing a strategy focused on business with daily connections, concerning the strategy of contract connections. However, when analyzing the rationale for selecting one of the strategies, the marina's position on the Croatian Adriatic, i.e. we should also consider its accessibility to emission markets. How to reach a measurable conclusion about the role of the marina's position in the business result? The best indicator is the charter that, under the conditions of the COVID-19 pandemic, showed that the northern part of the Adriatic was much less affected by the crisis in 2020. The north Adriatic charter operated with around 50%, while the Croatian south operated with barely 15% compared to 2019. From this, we can conclude that the proximity to emission markets related to marinas (Italy, Germany, Austria, Slovenia...) significantly mitigates the unfavorable effects of the crisis. In such conditions, the marina's owner and the Istrian marina management still accept the business risk that goes along with the daily berth business strategy. It is the attitude of the private marina Punat, as well as ACI's as a system of marinas. In contrast, both Frapa Dubrovnik and Frapa Rogoznica marinas employ a contract berth strategy, which is completely justifiable for business in southern Croatia. A new research question is raised here: the sensitivity to crises and the conclusions of strategic crisis management in marinas concerning previous knowledge.

4.4. Justification of the choice of strategies in crisis conditions

The previous calculations and explanations showed that the marina's position on the Croatian Adriatic significantly influences the choice of one of the two strategies. In crisis conditions, the choice of marina strategy must take into account all factors, and this is where strategic risk management and controlling come into play. That is, if the decision of the owners and management of the marinas in Istria, which are focused on the business strategy with daily berths and neglecting the berths on the contract, is taken as justified, then it is not justifiable for the marinas south of Istria. Marinas in northern and partly in central Dalmatia have reasons for a double decision, in which the acceptance or non-acceptance of the risk of the marina owner prevails. Due to COVID-19, marinas in northern and central Dalmatia have seen a 50% reduction in resistance, so the decision to open depends on the personal risk tolerance of the owner. Charter businesses in the south of Croatia's marinas only achieved 15% of the realization in 2020/2019, indicating the lack of justification for adopting the daily connection strategy. In the south of Croatia, you should only do business using the strategy of contract connections. With ACI, the problem is more complex. ACI's marinas span the northern to southern Adriatic, implementing the strategy of daily berths. As a result of omitting strategic risk management and controlling, ACI experienced unfavorable operational results in 2020. If we analyze the interface between the contract strategy and the daily connection strategy, we need to compare the ACI marina system with a marina that strongly focuses on the annual link to the contract. A good example is the Frapa Rogoznica Marina. At the same time, it should be taken into account that the presented business data of ACI Marina and Frapa Rogoznica Marina are based on berths. In the pandemic year 2020, ACI operated with 5,865 berths and Frapa with 586 berths. Therefore, Frapa berths make up barely 10% of ACI's berths, therefore it is to be expected that the business results will be around the stated ratio of berths.

Table 4. Primary comparative indicators of ACI and Frapa for 2019 and 2020 (in EUR 000)

Indicators (in EUR 000)	ACI Opatija		Difference	Index 2020/2019	Marina Frapa, Rogoznica		Difference	Indeks 2020/2019
	2019	2020			2019	2020		
Total berths	5.913	5.865	-48,0	99,2	650	612	-38	94,2
Berths, land	586	586	0,0	100,0	150	150	0	100,0
Berths, sea	5.327	5.279	-48,0	99,1	500	462	-38	92,4
Berths for charter companies*	-	-	-	-	28%	28%	0	100,0
Površina marine, ukupno (m ²)*	1.346.892	1.346.892	0,0	100,0	183.834	183.834	0	100,0
Income, total	237.410	185.532	- 51.878	78,1	52.085	49.308	- 2.777	94,7
Profit before tax	39.176	517	- 38.659	1,32	13.230	12.772	- 458	98,5
Total payments to the state and county	19.811	9.587	-10.224	48,4	17.269	15.679	- 1.590	90,8
PDV 25%*	63.042	55.200	- 7.842	87,6	13.574	12.820	- 754	94,4
PDV 13%	80	70	-10	87,5	642	606	- 36	94,4
Parafiscal charges*	1.309	1.272	- 37	97,2	2.679	2.266	- 413	84,6
Fixed concession (m ²)	1.754	1.889	135	107,7	83	83	0	100,0
Variable concession (%)	5.781	4.627	-1.154	80,0	1.110	812	- 298	73,2

Source: original results of ACI and Frapa.

As can be seen from the table, the data on the capacities of the ACI marina concerning the Frapa marina is moving in a ratio of 10:1 in favor of ACI. In contrast, the pandemic year 2020 showed an actual disaster in ACI's business results. ACI's disastrous business result came as a result of ACI's umbrella strategy, which was set for all marinas, regardless of the marina's location and its characteristics. The COVID-19 crisis revealed the vulnerability of Croatian Adriatic coast marinas, due to their focus on daily berths instead of contractual berths. Moreover, strategic risk management does not exist, and the strategy of daily connections is extremely vulnerable. In contrast, the Frapa marina consistently implements a berth strategy on an annual contract, in which the charter fleet participates with 28%. All this led to a loss of profit for the Frapa marina of only 1.5%, while ACI lost as much as 98.7% of its 2019 profit. In absolute terms, ACI made a profit of 510 thousand euros, while Marina Frapa made a profit of 12,772 thousand euros. Therefore, we can conclude that the business strategy of berths on an annual contract implemented by the Frapa marinas in Rogoznica and Dubrovnik makes the business structure much more resistant to crises like COVID-19. In contrast, the daily berth strategy, despite the indisputable better indicators of the business result achieved in non-crisis conditions, shows a high degree of sensitivity to risk. If we take into account the absence of strategic crisis management in the ACI system of the marina chain, the entire system becomes highly sensitive to a crisis.

5. CONCLUSION

Strategic risk management and controlling are relatively underrepresented in the theory of Croatian management, and they are unknown in practice. In the pandemic year 2020, the Croatian economy experienced great losses. In the case of Croatian marinas, the differences in the business results showed a greater or lesser degree of the risky approach of the owners of the marinas. At the same time, the charter found itself exposed to the crisis without the possibility of avoiding bad results, while marinas focused on business with annual moorings proved to be successful in overcoming the crisis. In addition to the fact that the science of strategic risk management does not help, the owner's decision to use the strategy of moorings on an annual contract proved to be an acceptable defense mechanism against damage from strategic risks.

The research carried out in this work did not show whether it was a planning decision of the marina management for one or another strategy. Based on the experience and knowledge of the owners and management of all Croatian marinas, we can conclude that the commitment to the contract berth strategy came as a preference or a departure from the risky owners' decisions. The decision to make less profit, but more secure income, ensured by annual contracts with the charter and boat owners, is a good decision, especially for marinas in Dalmatia. That primarily applies to private marinas where the private owner's capital dominates. The ACI system of marinas, which is predominantly state-owned, is more prone to risky decisions by owners. It can be accepted to some extent for a smaller group of marinas in Istria closer to emission markets. For ACI Marina in Dalmatia, the strategic decision for the daily berth business is a failure of the owner and management. Also, private marinas in Istria, which are not as numerous as, for example, the Punat Marina, operate with daily berths, because they can accept damages from the impact of the crisis due to their location. Significantly higher incomes from daily berths at Punat Marina offset expected crisis losses compared to contract berths. Whether such a strategy will prove acceptable in the future and the crises to come remains to be seen. It is increasingly necessary to participate in strategic risk management due to the rising frequency of crises. The need for theoretical research on strategic management is increasing, and in addition, it is necessary to better connect the theory and entrepreneurial practice of marinas in Croatia. The lack of knowledge and research in the economy is evident, as confirmed by the results of Croatian marinas, which are a prominent example of Croatian SMEs.

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THE IMPACT OF EDUCATION ON STUDENT POPULATION'S AWARENESS AND PERCEPTION OF CYBER SECURITY RISKS

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ABSTRACT

In a pilot study conducted on a sample of students of the University of Applied science "Nikola Tesla" Gospić, the aim was to determine the level of awareness of students regarding cyber security related to their activities on social networks and the impact of educating the student population on cybercrime on the level of fear of data misuse and reducing negative experiences of internet activities. Using the method of correlation analysis, a negative correlation was established between the inclination to education and the absence of fear, from which it follows that students who are more inclined to education show a greater fear of cybercrime and thus are more cautious when sharing data. Also, correlation between the level of education about cybercrime and online purchase experience, confirms that higher level of education decreases negative online purchase experience. The results are very significant for creators of teaching and educational content, and confirm the importance of continuous education, especially of young population.

Keywords: cybersecurity, risks, students, education

1. INTRODUCTION

Current scientific literature shows the recognition of the need to update the education of cyber security at an early age, so relevant research can be found from elementary school to college, which is not unusual considering the ever earlier age of using mobile devices. Special attention was paid to the awareness of the student population about security cyber risks and the way students behave in the cyber world, because the preservation of data security has become the primary priority of all organizations, especially those in which students are subjects who manipulate said data. Earlier research has shown four specific factors that influence the perception and behavior of students: "routinization and ritualization of risk, optimistic bias, self-efficacy bias, and the 'Can-I-Live' syndrome" (Sarathchandra, D. et al, 2016). According to Alharabi et al (2021), student awareness of cyber risks is most easily achieved by implementing security programs that aim to inform students about cyber risks by creating a question module "based on three essential aspects: password security, browser security, and social media". Being informed is a key element of minimizing cyber risk because: "...In most cases, students engage in data breaches and digital misconduct due to the lack of knowledge and awareness of cybersecurity and the consequences of cybercrime" (Alqahtani, MA, 2022). The importance of adequate education of students regarding cyber security is evident from another study (Szumski, 2018) which showed that students get the most information about cyber security from their friends, colleagues or on social networks, i.e. from unverified sources: "... where professional training was treated marginally compared to the leading sources of information".

Furthermore, research has shown: "...that the social engineering attacks, malware attacks, and the internet of things attacks ...gave no differences on gender and age .. while there were differences on education level and institution" (Matyokurehwa, K, 2021) so both these negative and positive correlations should be taken into account when creating a strategy to minimize cyber risks in the (higher) education sector. According to research conducted in Saudi Arabia (Maram et al, 2022): "...students' awareness of cybersecurity, its threats, and risks enhances students' references to action when facing cybercrime to protect the information, and technology assets to reach safe cyberspace".

2. RESEARCH OBJECTIVE, HYPOTHESIS AND METHODOLOGY

The aim of the research was to examine the impact of cybercrime education on awareness of the cyber dangers students are exposed to when making transactions or sharing of their personal data online and the level of fear of misuse of shared data with following hypotheses:

- **H1:** High level of education about cybercrime affects the reduction of negative online purchase experience
- **H2:** Education about cybercrime increases the fear of misuse of personal data

2.1. Research instrument

The data collection instrument was an online questionnaire. The questionnaire contained questions about the level of information about cybercrime, the way and channels of buying things on internet and social networks, the assessment of the need to upgrade knowledge about cybercrime in terms of creating a course on the given topic, and the degree of concern about misuse of their personal and confidential data (Likert scale from 1 to 5; 1=completely incorrect; 5=completely correct).

2.2. Methodology

The research was conducted in the period from March 29 to April 29, 2023 using the survey method. The data was collected through an online questionnaire distributed to total of 150 students of University of Applied science "Nikola Tesla" Gospić where 43% of students responded to the survey. The hypotheses were tested by determining the correlation between the given variables. Descriptive data analysis and the correlation method were used for data analysis. In order to measure the adequacy of the sample, the KMO Barlet test, Kaiser-Meyer-Olkin measure of sampling adequacy and Crombach alpha were conducted, which as expected due to the small sample is not significant, but the results are presented because it is a pilot study that should serve as a basis for further studies and their comparison with similar research in the world.

3. DESCRIPTIVE STATISTICS

The research showed that students don't have the habit of buying things on Instagram nor they use mobile applications for buying things online.

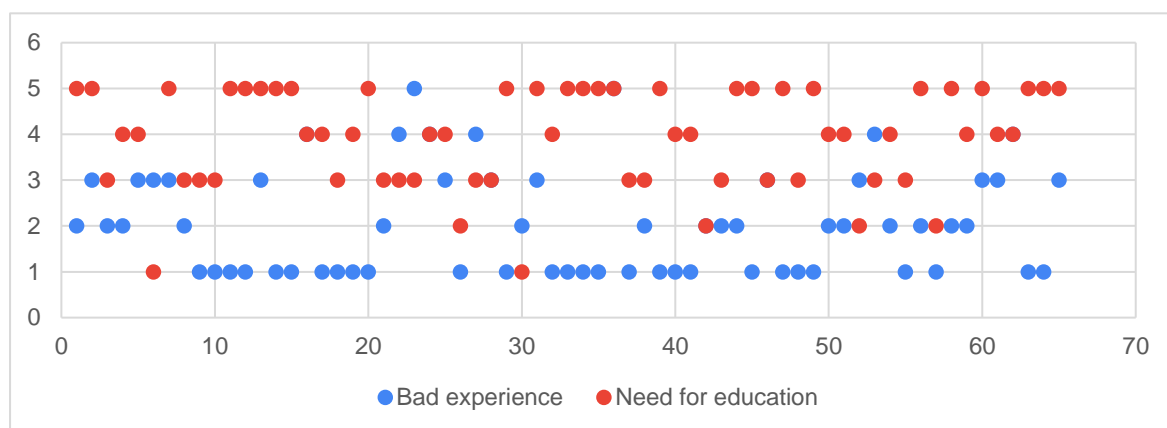
	N	mean	St. deviation
Cybercrime awareness	65	4,38	,842
Caution with data-sharing	65	4,25	,952
Bad experiences	65	2,05	1,138
Need for education	65	3,92	1,094
Fear of data misuse	65	2,65	1,124
Valid N (listwise)	65		

Table 1: Descriptive statistics
 (Source: authors, SpSS)

On the other hand, descriptive statistics determined the highest level of the arithmetic mean of 4.38, which shows that cybercrime is significant for the student population and that they are significantly familiar with its meaning. It is also evident from the descriptive statistics that the analyzed sample of students did not have bad experiences when sharing personal data online and that the awareness of the need for cybercrime education was also perceived as significant

4. CORRELATIONS MATRIX INDICATORS

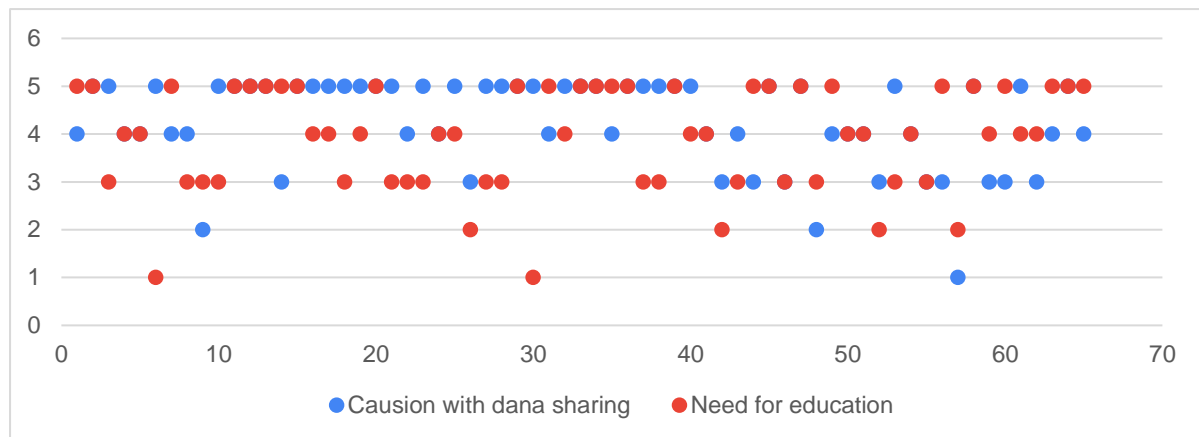
Since this research was conducted as a pilot study, due to the size of the sample, a correlation matrix showing only the direction of connection between variables. The strength of the coefficients will be ignored in this research, and the above can be interpreted when researching a larger sample. To determine the correlation, the Pearson correlation coefficient was used. Pearson's correlation coefficient refers to variables that are in a linear relationship and can take values between 1 and -1. The positive Pearson coefficient indicates that it is a positive correlation and that the values of both groups of data are growing accordingly. If the coefficient takes negative value, it indicates a negative correlation, i.e. an increase in one variable and a simultaneous decrease in the other variable. (Benesty, et. al., 2008, Cleophas et. al., 2018) The analyzed data show linear relationship, both in negative and positive correlation. Graph 1 presents the relationship between analyzed data referring to H1.



*Graph 1: Education vs bad experience
 (Source: authors)*

As shown in Graph 1., the need for education, as the tendency of students to continue learning, is diametrically oppositely related to a bad experience during online shopping. Graph 2 shows data related to the caution of students when purchasing in relation to the awareness of the need for education about cybercrime.

Graph following on the next page



Graph 2: Education vs bad experience
 (Source: authors)

The distribution of the data speaks in favor of a positive connection between the above two variables. The correlation between mentioned variables was tested by first testing whether the need for education (H1) affects the bad experience when sharing personal data on the web, and it was determined that the correlation is -0.148 , that is, the more educated students are about cybercrime, fewer negative experiences they experience. Due to the small number of the sample, this result did not show statistical persistence in numbers, but it is in the direction of movement (as the number of cybercriminal education increases, the amount of negative experiences decreases).

		Cybercrime awareness	Caution with data-sharing	Bad experiences	Need for education
Cybercrime awareness	Pearson Correlation	1	0,211	0,030	0,168
	Sig (1-tailed)		0,091	0,812	0,180
	N	65	65	65	65
Caution with data-sharing	Pearson Correlation	0,211*	1	0,061	0,213
	Sig (1-tailed)	0,091		0,627	0,088
	N	65	65	65	65
Bad experiences	Pearson Correlation	0,030	0,061	1	-0,148
	Sig (1-tailed)	0,812	0,627		0,240
	N	65	65	65	65
Need for education	Pearson Correlation	0,168	0,213	-0,148	1
	Sig (1-tailed)	0,180	0,088	0,240	
	N	65	65	65	65

Table 2: Correlation's matrix indicators for H1 hypotheses testing
 (Source: authors, SpSS)

Students who think they need additional education still have negative experiences when buying things online, which proves the positive trend of those who are not educated enough with a negative experience. Testing of the second hypothesis (H2) showed that the higher the level of education, the greater the caution when sharing data, and that a greater tendency of students to education increases fear and vice versa - greater fear causes a greater tendency of students to educate.

		Cybercrime awareness	Caution with data-sharing	Need for education	Fear of data missuse
Cybercrime awareness	Pearson Correlation	1	0,211	0,168	0,063
	Sig (1-tailed)		0,091	0,180	0,615
	N	65	65	65	65
Caution with data-sharing	Pearson Correlation	0,211	1	0,213	0,068
	Sig (1-tailed)	0,091		0,088	0,590
	N	65	65	65	65
Need for education	Pearson Correlation	0,168	0,213	1	-0,035
	Sig (1-tailed)	0,180	0,088		0,781
	N	65	65	65	65
Fear od data missuse	Pearson Correlation	0,063	0,068	-0,035	1
	Sig (1-tailed)	0,615	0,590	0,781	
	N	65	65	65	65

*Table 3: Correlation's matrix indicators for H2 hypotheses testing
 (Source: authors, SpSS)*

5. CONCLUSION

A pilot study showed that students who are more inclined to education have a greater fear of data misuse. The variables "I have no fear" and "need for education" are negatively correlated, but the relationship is not strong. Using the method of correlation analysis, a negative correlation was established between the variables "tendency to education" and "absence of fear", which means that students who are more educated have a greater fear of cybercrime and are therefore more careful when sharing data. The limitation of the conducted research stems from the convenient sample since it is a pilot study which reduces the possibility of generalization to the general population, therefore it would be useful for future research to expand the sample and possibly compare it with the population of other universities of applied sciences in order to determine the relation of education and cyber risks.

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OFFICE MANAGEMENT OF LEGAL ENTITIES WITH PUBLIC AUTHORITY – A CROATIAN EXAMPLE

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ABSTRACT

Properly organized office management is crucial for ensuring the efficient and effective operation of any organization. It enables proper documentation management, reducing the risk of information loss, inaccuracies, and data security breaches. An organized office management system significantly facilitates the work within the organization, leading not only to better work results but also to a more pleasant working environment—documents are in place, moving through the organization in a predictable and clear manner, and the organization itself appears orderly and professionally managed from the outside. Legal entities outside the circle of state bodies, whether profit-oriented companies, institutions, or associations, are generally free to organize their model of office management and document flow within the organization. Public authorities precisely prescribe the handling of only part of the documentation—for example, that related to financial-material operations. Additionally, special regulations exist for documentation containing personal data. However, when a legal entity has certain public authorities, it becomes obligated to implement the state model of office management. In the Republic of Croatia, the state office management model was significantly reformed in 2021 with the adoption of the new Office Management Regulation. This general legal act applies to state administration, local and regional self-government, and numerous legal entities exercising public authorities. Among these legal entities, there can be many companies (including those in private ownership), institutions, professional chambers, and even citizen associations. When public authorities are transferred to them, they become obligated to apply the office management system regulated by the aforementioned Office Management Regulation, a bylaw enacted by the Government of the Republic of Croatia. In this article, we will analyse this specific obligation of maintaining the state office management system in legal entities with public authorities in the Republic of Croatia.

Keywords: Croatia, companies, document flow, office management, public authority

1. INTRODUCTION

Document management within an organization is the responsibility of the organization itself, which will regulate its office management (from the receipt and creation of individual documents to their internal movement and storage) through its internal acts. For smaller associations, this may be just a few articles of the statute or some internal act that gives most of the authority to the organization's secretary. Larger associations will have rules on handling documents and business documentation flow. Large business systems may also apply the international standard for document management ISO 15489 (ISO). The office management of a legal entity is usually a matter of internal regulations and rules of the legal entity itself – public authorities precisely regulate mainly segments related to financial-material operations (invoices, dispatch notes, payments), personnel records (employees, external associates, employment contracts). In some segments, such as personal data protection, public authorities require organizations to develop models and procedures for document storage but without prescribing precise procedures. The General Data Protection Regulation states that personal data must be processed in a manner that ensures appropriate security of personal data, including protection against unauthorized or unlawful processing and against accidental loss, destruction,

or damage, using appropriate technical or organizational measures without specifying the technical aspects of these measures. (GDPR) However, there is one exception – legal entities with public authorities are required in the Republic of Croatia to base their office management in the part where they exercise public authorities on the Office Management Regulation. (Uredba o uredskom poslovanju) In this case, companies and other legal entities (institutions, citizens' associations) that are not part of the state and public administration must apply the office management system provided for the public sector. This means they must adhere to the rules governing document handling, their receipt and issuance, their recording and delivery for work, processing, use, dispatch, storage, disposal, and submission to the competent archive prescribed by the mentioned Regulation. Generally, this means maintaining a dual office management system – one in classic business relations and the other formal and strictly prescribed in cases where the organization exercises public authority. This duality and the simplicity and flexibility of the operations of companies and smaller institutions, which includes the simplicity of working with documentation and office management, can conflict with the strictly prescribed way of operating in the public sector. As this can present a significant challenge for the organization, this article will explain this specific category of office management for legal entities with public authority, starting with defining what public authorities are.

2. PUBLIC AUTHORITIES

2.1. Obligated Parties under the Office Management Regulation

The Office Management Regulation states in its Article 1 that its provisions apply to the office management of state administration bodies, other state bodies, local and regional self-government units, and legal entities with public authority (public law bodies). The first part of the provision is clear – it is an obligation for the classical state administration in a broader sense (ministries, state administrative organizations, state institutes), then various state bodies and numerous public institutions (e.g., schools, faculties, institutes), and various regulatory agencies outside the classical tripartite state power (Barić & Đerđa, 2010). Furthermore, this includes local and regional self-government – in Croatia, these are municipalities, cities, and counties. However, the second part of the provision is quite general, referring to the obligation to apply the Office Management Regulation by legal entities with public authority. These legal entities are not specified in this regulation, so they need to be defined to identify all the obligated parties under the Office Management Regulation, which significantly changes and very precisely regulates the method of document management within the organization. The Regulation itself is quite extensive – it has 69 articles, and another document is attached to it – the Instruction on Numeric Codes of Documents and the Content of Office Management Records, which, together with the Regulation, forms a functional whole. (Naputak)

2.2. Defining Public Authorities

To define which entities fall within the scope of legal entities with public authority, it is first necessary to define public authorities. The dean of Croatian administrative law, Ivo Borković, in his book Administrative Law, states that there are two separate concepts of administration – formal, which is based on the holder of the service, and material, which focuses on the nature of the service, its content. For the formal concept, it is essential that the service is performed by a public legal entity, while for the material concept, it is crucial that a specific service has particular importance for the realization of the interests of the social community, thus being recognized as a public service, which usually obtains a special legal regime. The character of a public service, Borković further states, is granted by a general act (legal norm). (Borković, 2002) In the Republic of Croatia, the tasks of state administration are determined by the State Administration System Act, which states that state administration tasks are "the implementation

of state policy, the direct implementation of laws, inspection supervision, administrative supervision, and other administrative and professional tasks." It is also stated that a state administration task is "any task assigned by the law regulating a particular administrative area to a specific legal entity and defined as a task performed as a public authority." (Zakon o sustavu državne uprave). Public authorities are a special form of public power exercised by non-state entities – institutions, companies, and other entities (for example, ship commanders have them). Public authorities generally fall into three types of legal tasks: 1) regulating (norming) specific legal relationships; 2) deciding on individual matters regarding specific rights and obligations; 3) performing other public authorities such as administrative actions (e.g., certification). In some sectoral laws, it is explicitly stated that certain tasks are performed as public authorities; however, there are also examples of laws where such explicit provision is not included, and the assignment of public authorities is derived through interpretation. (Rajko, 2016) When a public authority is not explicitly stated, and we speak of interpretation, the most important thing is to determine whether a specific activity of a legal entity is an administrative matter.

2.3. Examples of Legal Entities Exercising Public Authorities

The modern state, optimizing its operations in increasingly complex legal relations, has transferred an exceptionally large number of public authorities to legal entities. When determining whether a legal entity exercises public authorities, it is not necessary to look at who the founder is, whether it is the state, local self-government, or a natural person, but whether that legal entity has certain public authorities. According to the General Administrative Procedure Act (Zakon o općem upravnom postupku) in the Republic of Croatia, an administrative matter is any matter in which a public law body, in an administrative procedure, decides on the rights, obligations, or legal interests of a physical or legal person or other parties, directly applying laws, other regulations, and general acts regulating the appropriate administrative area, as well as any matter defined by law as an administrative matter. (Ministarstvo pravosuđa, uprave i digitalne transformacije) As mentioned, sometimes it is explicitly stated that certain authorities of a legal entity are public authorities. As an example, we will take the Preschool Education Act. (Zakon o predškolskom odgoju i obrazovanju) This Act explicitly prescribes that a kindergarten, as a public authority, performs tasks of enrolling and unenrolling children from kindergarten, maintaining appropriate records, issuing certificates and opinions, and entering data about the kindergarten into the common electronic registry. It is more complex when we talk about interpretation, where it is necessary to conclude whether a certain authority is a public authority. Let's stick to the same Preschool Education Act. Attendance at kindergarten is not mandatory for children. However, preschool – a special program of 250 hours for children not attending a regular kindergarten program – is a prerequisite for attending school. This means that the certificate of completion of the preschool program will be issued as an administrative act since it is by its nature an administrative act, deciding on the rights of a physical person. In contrast, a certificate of completion of the kindergarten year, which is not a prerequisite for school enrolment, can be in some informal, unofficial form. Similarly, a language school is not an obligated entity under this Regulation; however, if the same language school wishes to issue certificates of language proficiency to be entered into the e-workbook, it is obligated to apply the Regulation. Let's take another example where we conclude that public authorities are assigned through interpretation – the Road Traffic Safety Act states that technical inspection stations perform administrative tasks related to technical inspections and vehicle registration. (Zakon o sigurnosti prometa na cestama) The same Act states that to validate the traffic license, the technical inspection station must have a stamp in accordance with the regulations on stamps and seals of the Republic of Croatia. It is an administrative matter – both the traffic license and the registration plate are official documents, although today they are issued by the technical inspection station, usually a limited

liability company in private ownership. The technical inspection station, related to these tasks, has public authority. Once, these tasks as an administrative matter were directly performed by the Ministry of the Interior as part of the classical state administration, but today they are transferred to the public authorities of legal entities, which is simpler for both citizens and the state. In some cases, public authorities are clear from the regulation itself – for example, Croatian Control – Croatian Air Navigation Services Limited is a company, but it is given very broad public authorities by a special Act on the Establishment of Croatian Air Navigation Services. (Zakon o osnutku Hrvatske kontrole zračne plovidbe) Sometimes it is necessary to analyse the regulations to determine whether a legal entity has public authorities – for example, Narodne novine d.d. is a very important company that issues Narodne novine – the Official Gazette of the Republic of Croatia, but they do not have public authorities because what will be printed in them in the official part is regulated in the Office for Legislation of the Government of the Republic of Croatia. (Vlada Republike Hrvatske) In general, we can say that public authorities are held by legal entities that: issue public documents conferring a certain qualification or academic degree (diplomas, certificates) – thus, schools, colleges, academies, and other educational institutions; issue decisions allowing the performance of certain activities – for example, port authorities that grant concessions or permits for activities; issue decisions regulating the rights of other physical and legal persons (permits for connection to the energy or water supply network, use of flues, etc.); issue or certify public documents (traffic license for a motor vehicle, documents related to the movement of animals and plants, etc.). (Vojković, 2023)

3. RULES AND MEASURES OF OFFICE MANAGEMENT

If a legal entity falls among those exercising public authorities, it becomes an obligated entity under the Office Management Regulation to the extent it exercises public authorities. We will briefly list the most important provisions of the Regulation. Firstly, it is prescribed that public law bodies conduct official correspondence with each other and with physical and legal persons primarily electronically. The primary method of official correspondence is electronic. The classic paper-based business method is an exception that must be appropriately justified. Electronic business today also means the use of an electronic signature and seal defined by Regulation (EU) No 910/2014 on electronic identification and trust services for electronic transactions in the internal market (Regulation No 910/2014). The notice of office hours with parties must be published on the public law body's website and prominently displayed at the entrance to the official premises. Office and archive tasks are generally performed in a separate organizational unit of the public law body. Generally is a phrase that includes the possibility of different organization. Thus, if it is a public law body with not a large volume of office work – a kindergarten, school, or some small institution, the tasks of the office and archive should be performed in an economically appropriate manner, most often in the secretariat of the organization. According to the explicit provision of the Regulation, documents are recorded in the office management information system of the public law body. We emphasize that the application of the office management information system is mandatory for all obligated entities under the Regulation. The classic paper-based business method and paper record-keeping of office administration books are no longer allowed for obligated entities under the Office Management Regulation. We note that the technical specification of the electronic office management information system is regularly published and updated in the form of a publicly available document. (Središnji državni ured za razvoj digitalnog društva) Documents received through the office management information system or another information system are processed electronically, recorded in the office management information system, and generally not printed. There is an obligation to confirm receipt of documents. The receipt of a document received through the office management information system or electronically in another way

that enables two-way communication is automatically confirmed by sending a confirmation to the sender that the document has been received and which public law body received it. The receipt of a document received in physical form is confirmed at the request of the party after recording the document in the office management information system. By entering the first document in the office management information system into the record of cases of an administrative or non-administrative procedure, a case is created. According to the glossary of the Regulation, a file (case) is a set of documents, appendices, and other records related to the same issue or task or that otherwise form a special unit. Generally, documents and appendices received in physical form are converted into electronic form so that they are searchable, using the optical character recognition process. The office management information system separately keeps records of first-instance administrative procedures, second-instance administrative procedures, and non-administrative procedures. These are the three possible records in the Croatian framework of office management for public law bodies. Legal entities with public authority will generally keep records of first-instance administrative procedures (two-instance resolution is usually held by central state administration bodies). The uniqueness of documents within the public law body is marked by a unique document identifier. The unique document identifier is data that forms an integral part of the document and is unique within the office management information system, containing the numerical code of the body in which the document is entered, the classification code of the case to which the document belongs, and the serial number of the document in the case. The Regulation extensively describes the method of creating the classification code "KLASA:" and the registration number "URBROJ:" by which it is possible to uniquely identify each document in the state. Cases and documents are delivered to the competent organizational unit for work through the office management information system. Therefore, the Regulation, as we mentioned in the introduction, regulates the entire document flow in the organization. All official persons of the public law body must have access to the office management information system in accordance with the assigned authorities as per the decision of that body. Official correspondence with public law bodies and parties is conducted with acts that have a formalized form and content: 1. header; 2. unique document identifier; 3. name or personal name and address of the recipient; 4. brief indication of the subject matter; 5. text of the act; 6. designation of the official duty name and personal name of the official person; 7. signature and 8. seal. Additionally, an act in electronic form verified by an electronic signature does not have to contain an electronic seal. The Office Management Regulation precisely regulates the appearance of headers. It distinguishes between the header of the act of state administration bodies, the header of the act of local and regional self-government bodies, and the header of the act of legal entities with public authority. According to the Regulation, the header of the act of legal entities with public authority contains: 1. the coat of arms of the Republic of Croatia; 2. the name "Republic of Croatia"; 3. the name of the legal entity with public authority; 4. the classification code; 5. the registration number; 6. place and; 7. date of the act. It is interesting that older regulations did not regulate the header of acts of legal entities with public authority issued based on public authority so precisely, and it can be assumed that the need for precise regulation arose due to the large number of such legal entities today. It should be noted that the coat of arms of the Republic of Croatia is in the header of such acts, not the logo of the legal entity. When a legal entity with public authority does not exercise its public authority – it uses its business header with its logo. After creation, the act is dispatched to the party. According to the Regulation, the act is electronically dispatched by the official person responsible for resolving the case, and this is automatically recorded in the office management information system. An act dispatched electronically must be in a form that prevents content alteration. An act in physical form is dispatched by the official person performing the office tasks or another authorized official person. Finally, the completed case is delivered by the official person responsible for resolving the case through the office

management information system to the archive. When it comes to cases in physical form that were conducted on paper, the documentation collection or unit is organized according to classification codes and placed in a special cover (archive folder) marked with data relating to the technical unit.

4. ADAPTATION OF THE BUSINESS PROCESS TO PERFORMING TASKS WITH PUBLIC AUTHORITY

Legal entities with public authority, as explained in the previous chapters, in the Republic of Croatia are obligated to apply the Office Management Regulation when exercising public authority in their operations. This significantly complicates the document handling process within the organization, and the organization must adapt to this circumstance. As maintaining two separate models of document management is complex and requires additional costs and resources, the organization must make an assessment. If it frequently uses public authority in its operations and issues a large number of acts based on public authority, it is justified to conduct all business within the office management system. However, if the number of acts issued based on public authority is small and generally the exercise of public authority constitutes only a small part of the organization's activities, it is justified to separate the exercise of public authority and document flow within the organization and manage it separately – one for tasks where public authority is exercised based on the Office Management Regulation and another for tasks where the legal entity does not exercise public authority but appears in business as a classic private law entity. This second part of business documentation not managed within the office management system is called "record keeping" in Croatian. It should be emphasized that the state coat of arms and the name "Republic of Croatia" are used only when exercising public authority, not in usual business and other transactions in the sense of private law. When deciding on adapting the business process, it is necessary to analyse the needs of the organization and the principles and standards of office management. The principles of office management are reliability, integrity, compliance, completeness, and systematicity. (ARHINET) The literature also mentions other principles: the principle of legality and accuracy; the principle of expediency; the principle of simplicity, transparency, and uniformity; the principle of economy (thrift); the principle of courtesy. (Odbaša, 2007) These principles should be applied when creating a business model for document management. Of course, there is also the mentioned Standard ISO 15489-1:2016 Information and documentation — Records management, which is accepted as a Croatian normative document under the name HRN ISO 15489-1:2016 (accepted foreign standard in the English language) (HRN). It is necessary to conduct an analysis of business processes and document flow to avoid redundancies. We mention that solutions have already appeared in Croatian practice where office management in accordance with the Regulation is integrated into the business system of an organization that conducts most of its business outside that system. Such solutions can also be of high quality but require appropriate preparation and efforts to harmonize greatly different document management models, but if they are made for a larger number of bodies with similar authorities (e.g., kindergartens), they can also be a financially favorable solution. Effective document control helps avert issues related to product quality, safety, and health by reducing the risks of document inaccuracies, loss, and breaches of information security. Without proper documentation and management, companies would face challenges in meeting their quality and compliance goals. Thus, ensuring the availability of the correct documents at the appropriate time and place can be crucial for the survival of any organization. (Kassa, 2016) When it comes to business processes involving public authority, the importance of good document management is even greater because legal entities with public authority in the Republic of Croatia are under the supervision of even two state administration bodies. They are under the supervision of the ministry responsible for the specific administrative area (maritime affairs,

education, culture, or another), which oversees the legality, efficiency, purposefulness, and effectiveness of administrative procedures in its domain. However, they are also under the supervision of the ministry responsible for general administration, which oversees the implementation of procedures defined by the Office Management Regulation based on the General Administrative Procedure Act. (Zakon o općem upravnom postupku)

5. CONCLUSION

The importance of quality office management was first addressed in Croatia by Dubrovnik native Benedikt Kotruljević in his work "Book on the Art of Trading" published in 1458, where he writes to the merchant: "You must keep your office neat, and on every letter you receive, you must mark where it came from, the year, month, and day, store it in a designated place, and reply to each one, marking the reply on the top. Then, every month, bundle them together and store them, and equally string together all bills you pay, important letters, notes, or documents, and keep them as very necessary things." (Kotruljević, 2009) The importance of quality office management, which Kotruljević wrote about, is even greater today when informational assets are often the most important assets of an organization. In cases where legal entities exercise public authorities, they are obligated to comply with the Office Management Regulation and the procedures prescribed therein. Legal entities often find it difficult to adapt to procedures designed for the operation of state and public administration – they often find them complex, complicated, and even unnecessary. Companies often have significantly different document management procedures than those regulated by the Office Management Regulation. Furthermore, various non-profit legal entities are often very simply organized, so implementing the office management system is not only a procedural but also a staffing challenge for them. For example, in Croatia, numerous activities require licensing conducted by professional chambers, and since this is an administrative matter (courses and trainings are a prerequisite for obtaining a license that grants certain rights), they are obligated to apply the Office Management Regulation. This can be challenging for a chamber that may have only one employed person. Applying the Office Management Regulation is an obligation when exercising public authorities. If a legal entity wants to perform tasks involving public authorities, it must adapt to the procedures prescribed by the Office Management Regulation. Non-compliance with the procedures defined by the Office Management Regulation can lead to sanctions, various types of responsibilities, and even the revocation of public authorities. In some cases, this can prevent the organization's further operation. As such legal entities usually perform numerous tasks where they do not have public authorities, it is necessary to formally introduce the rules of office management and clearly separate the areas where the legal entity is an obligated entity under the Office Management Regulation and where it conducts business documentation according to its own business rules and obligations under other regulations, such as those on accounting and financial operations. A legal entity with public authority can certainly consult specialized experts for developing its document management processes. Quality management of business documentation and compliance with the office management rules set by the state is not only a business necessity but also a legal obligation for legal entities with public authorities.

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APPLICATION OF BLOCKCHAIN TECHNOLOGY IN SUSTAINABLE BUSINESS

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ABSTRACT

Blockchain technology, a groundbreaking innovation in digital ownership, enhances trust, security, and transparency in digital transactions. It operates as a distributed ledger, ensuring data immutability and transparency through cryptographic hashing. Key attributes include decentralization, transparency, immutability, security, consensus mechanisms, privacy, and smart contracts. These features enable significant applications in sustainable business practices, such as reducing carbon footprints through efficient supply chain management, ensuring ethical sourcing via transparent traceability, and facilitating green finance through decentralized autonomous organizations (DAOs). Blockchain's applications—such as international payments, supply chain transparency, DAOs, and asset tokenization—show its potential to streamline operations, bolster security, and foster innovation. As blockchain technology matures, its integration into sustainable business practices is expected to increase, driven by ongoing research, regulatory developments, and stakeholder collaboration. This paper explores the interplay between blockchain technology and sustainable business practices, emphasizing their impact on the modern economic environment and their potential for reducing environmental impact.

Keywords: *blockchain, sustainable business, transparency, environment, ESG*

1. INTRODUCTION

Blockchain technology is one of the most significant innovations in the digitalization of ownership in this century, attracting considerable public and academic interest. Recognized as the fifth disruptive computing technology alongside cloud computing, it follows the mainframe, personal computer, the internet, and social networks and smartphones (Swan, 2015). Blockchain's significance lies in its capacity to address persistent challenges related to trust, security, and transparency in digital transactions and data management (Kshetri, 2018; Yli-Huumo et al., 2016). It enables the permanent, immutable, and transparent recording of data and transactions, facilitating the exchange of any item of value, whether physical or intangible (Nakamoto, 2008; Tapscott & Tapscott, 2016; Woodside, Augustine & Giberson, 2017; McKinsey, 2022). Recent studies have highlighted the potential of blockchain technology in promoting sustainable business practices. For instance, blockchain can significantly enhance supply chain transparency and traceability, which is crucial for ensuring ethical sourcing and reducing carbon footprints (Saber et al., 2019). By providing a decentralized and immutable ledger, blockchain helps in verifying the authenticity and sustainability of products, from raw materials to finished goods (Kouhizadeh & Sarkis, 2018). Moreover, the integration of blockchain in green finance can facilitate the tracking and reporting of environmental, social,

and governance (ESG) metrics, thereby promoting accountability and transparency in sustainable investments (Naderi & Tian, 2022; Kalaiarasi & Kirubahari, 2023; The Green Block, 2023; Mulligan, Morsfield, & Cheikosman, 2024). Blockchain's decentralized and immutable nature ensures the integrity of ESG data, making it resistant to manipulation and enhancing trust among stakeholders. By providing a transparent and auditable ledger, blockchain allows real-time access to verified ESG metrics, which can help investors make informed decisions and support sustainable business practices. Additionally, smart contracts can automate the enforcement of ESG criteria in investments, ensuring compliance with sustainability goals and reducing the risk of greenwashing (Erwin Halim et al., 2023; The Green Block, 2023). In the realm of energy markets, blockchain technology is being leveraged to support the development of decentralized energy systems. It enables peer-to-peer energy trading, thus promoting the use of renewable energy sources and increasing grid efficiency (Andoni et al., 2019; Xia & Niu, 2021). Furthermore, blockchain-based smart contracts can automate and enforce sustainability standards in various sectors, reducing the need for intermediaries and enhancing operational efficiency (Li, Greenwood, & Kassem, 2019). Given these applications, blockchain is poised to play a pivotal role in the transition towards more sustainable and transparent business practices. As research and development in this field continue to grow, the potential for blockchain to drive innovation and sustainability across various industries becomes increasingly evident (Wang et al., 2019).

2. BLOCKCHAIN TECHNOLOGY

Blockchain is best known as the network on which cryptocurrencies operate, however, it is a special type of database and can be observed as a distributed ledger of transactions (Casino, Dasaklis & Patsakis, 2019; Sharma, Jindal & Borah, 2022; Tripathi, Ahad & Casalino, 2023). One key difference between other databases and blockchains is the method of structuring data because the information on a blockchain is written in groups, i.e. blocks. These blocks have a certain capacity, and when filled, they close and connect to the previously filled block, thus creating a data chain. All new information is written in a newly formed block which will be added to the chain, as well, when its capacity reaches its maximum (Hayes, 2023). Also, each block contains a link to the previous one in the form of a cryptographic hash, making it almost impossible to change or delete data once it is written on the blockchain. Hashing is a mathematical function that transforms an input of any length into a fixed-length encrypted output (Aggarwal & Kumar, 2021). Regardless of the original data amount or file size, its unique hash will always be the same length. Moreover, hash functions are one-way functions, meaning they cannot be used to reverse engineer inputs from a distributed output. The cryptographic hash function combines message transfer capabilities with security properties (Investopedia, 2023). Hash functions are algorithms which determine how information is encrypted. Even a small change in input data will result in a significantly different output. A simplified scheme of how blockchain works is shown in Figure 1.

Figure following on the next page

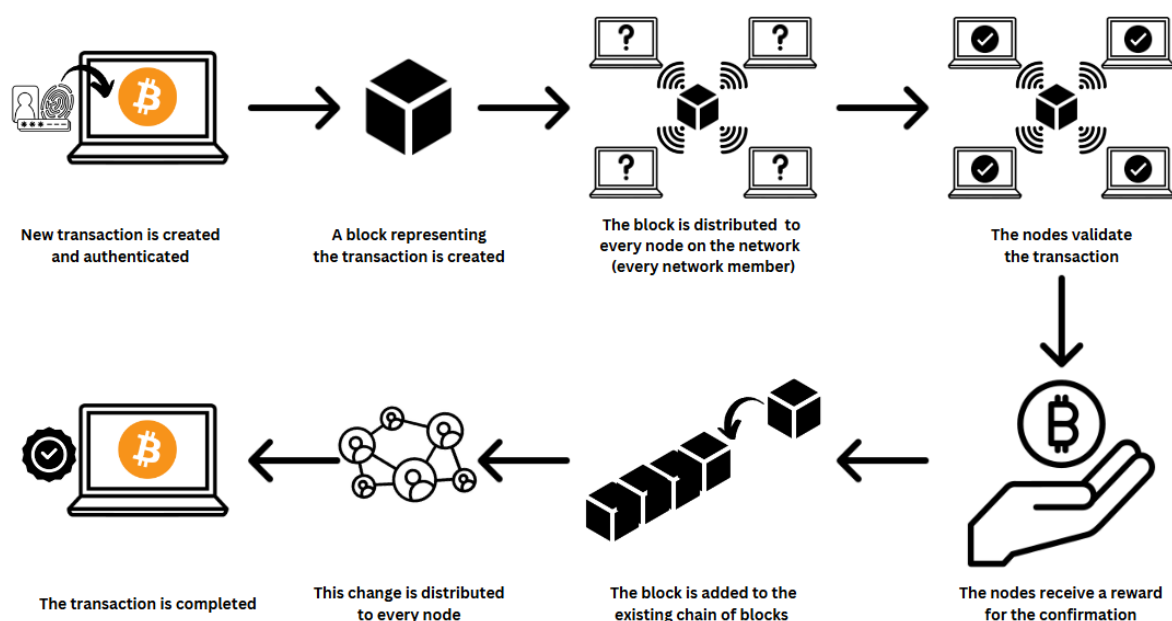


Figure 1: How are transactions on the blockchain written?
 (Source: created by the author, based on Euromoney Learning, 2020)

Blockchain technology represents a fully distributed system for cryptographic recording and storing of an immutable, consistent, and linear log of transactions between connected parties. It can be considered a distributed ledger which is consensually updated and validated by its users. In such networks, blockchain technology implements transparency and guarantees a system-wide final consensus on the accuracy of the entire transaction history (Risius & Spohrer, 2017). Unlike traditional centralized systems that rely on a single point of authority, blockchain disperses data and stores it on a network of independent computers (nodes). This ensures that neither entity has full control but needs consensus from the majority of network members. Blockchain systems, in addition to processing and storing transactions, can ensure that transactions comply with predetermined rules in the form of smart contracts. This allows even parties who do not have complete trust in each other to conduct transactions without the need for intermediaries.

2.1. History of blockchain development

The origins and early development of blockchain technology are aligned with the creation of bitcoin, the first cryptocurrency introduced by an individual or a group known by the pseudonym Satoshi Nakamoto. Nakamoto's whitepaper, published in 2008 with the title "Bitcoin: Peer-to-Peer Electronic Cash System", laid the foundation for blockchain technology. They introduced a decentralized digital currency system which could function without the need for intermediaries such as banks or governments. The motivation behind this was the loss of confidence in the financial system which led to the global financial crisis of 2008. Nakamoto (2008) presented a new solution to the long-standing problem of dual consumption in digital currency systems, proposing the implementation of distributed ledger technology that is now known as blockchain. This general ledger serves as a transparent and immutable record of all transactions conducted within the bitcoin network, ensuring the integrity and security of the currency system. The document explains the technical details of the operation of the bitcoin network, including its Proof-of-Work (PoW) consensus mechanism, which allows the network to reach consensus on the validity of transactions through computer puzzles solved by network participants (miners).

In addition, the whitepaper describes the process of issuing bitcoin by mining and gradually reducing block rewards over time, ultimately leading to a limited supply of 21 million bitcoins. Through the examination of potential attack vectors and security considerations, the resilience of the bitcoin network to malicious participants is emphasized and highlights its value as a decentralized currency system. This was the first time anyone had published a technical solution with a set of rules that had the potential to transform numerous people's vision of online money exchange in a decentralized and reliable way, without relying on a third party (Tapscott & Tapscott, 2016).

2.1.1. Before bitcoin

The concept of a Bitcoin-like solution originated in 1991 with Stuart Haber and W. Scott Stornetta's paper "How to Time-Stamp a Digital Document." They proposed using cryptographic techniques to create an immutable chain of blocks, each containing a timestamp and a link to the previous block, ensuring the integrity of digital documents. Their work laid the foundation for decentralized systems and cryptographic protocols, despite not being widely adopted at the time. Nick Szabo's 1998 bit gold concept, publicly outlined in 2005, addressed trust and security issues in financial systems by proposing a decentralized digital currency system based on Proof-of-Work, similar to Bitcoin. Szabo's ideas significantly influenced blockchain technology and cryptocurrencies, even leading to speculation that he might be Satoshi Nakamoto, the creator of Bitcoin, although he denied these claims (Sharma, 2021). His work remains foundational to the development of decentralized consensus mechanisms and cryptographic currencies.

2.1.2. After bitcoin

The last important step in the development of blockchain as it is known today occurred in 2013 when Vitalik Buterin suggested that Bitcoin needed a script to create decentralized applications. In 2014, he unveiled a whitepaper titled "Ethereum: A Next-Generation Smart Contract and Decentralized Application Platform." According to Buterin (2014), unlike the Bitcoin network, Ethereum allows developers to implement a wide range of computer tasks directly on the blockchain network. The platform's native cryptocurrency, ether (ETH), serves both as a medium of exchange and as a utility token for executing smart contracts. Ethereum's innovative architecture aims to democratize access to decentralized finance, digital identity solutions and decentralized autonomous organizations (DAOs), fostering a more inclusive and transparent digital economy. After Buterin's initial work, other developers joined the project. Vitalik Buterin, Gavin Wood, Charles Hoskinson, Amir Chetrit, Anthony Di Iorio, Jeffrey Wilcke, Joseph Lubin, and Mihai Alisie are considered co-founders of the Ethereum blockchain. Ethereum gained public awareness in early 2014 when Buterin unveiled the concept of the project at a Bitcoin conference in Miami. The project raised capital through an initial coin offering (ICO), selling millions of dollars worth of ether in exchange for funds which will be used to develop the project. Although ETH could have been purchased in 2014, the Ethereum blockchain became operational on July 30, 2015, meaning ETH customers had to wait for the blockchain to launch before they could move or use their ether (Cointelegraph, n.d.). There have been multiple attempts to create other blockchains between Bitcoin and Ethereum, but they were, for the most part, replicas of Bitcoin which improved the speed and fees of transactions, increased scalability or provided greater anonymity. Buterin's decision to start developing Ethereum had far-reaching consequences, creating a wave of innovation in blockchain technology and forming the path which led to the emergence of a dynamic ecosystem of decentralized applications and protocols.

2.2. Key characteristics of blockchain

At its core, blockchain is characterized by a set of features that distinguish it from traditional centralized systems. These characteristics include decentralization, transparency, immutability, security, consensus mechanisms, privacy, and smart contracts. These features are interconnected and complementary, together creating the potential of blockchain technology. Understanding them is key to understanding the implications of this technology in different areas. Decentralization, a core principle of blockchain technology, promotes a shift from hierarchical governance models to distributed networks where authority is shared among participants, enhancing trust and resilience. Transparency ensures transaction records are publicly available, fostering trust and reducing fraud. Immutability protects data from alteration, relying on cryptographic hashing and consensus mechanisms, although vulnerabilities like the 51% attack exist. However, in truly decentralized networks, these attacks are almost impossible due to the computational power required to carry out the attack. Consensus mechanisms, such as Proof-of-Work (PoW) and Proof-of-Stake (PoS), ensure network member's agreement and data integrity. Security is achieved through public key infrastructure and cryptographic hash functions, and decentralization prevents single points of failure. Privacy is maintained through anonymity or pseudonymity, allowing anonymous transactions, although balancing it with regulatory compliance remains a challenge. Smart contracts, first introduced by Ethereum, automate agreements without intermediaries, enhancing efficiency and trust in digital interactions. These interconnected features collectively enhance blockchain's potential across various applications and industries.

3. BLOCKCHAIN USE-CASES IN SUSTAINABLE BUSINESS

The implementation of blockchain technology allows enterprises to explore new business models and unlock innovative opportunities in the digital economy, while also addressing sustainability goals. Tokenization, which involves representing real-world assets as digital tokens on the blockchain, facilitates partial ownership, enhances liquidity, and allows for programmable value exchange (Banerjee et al., 2023). This opens up new avenues for asset monetization, crowdfunding, and decentralized financial applications, revolutionizing capital markets and democratizing access to investment opportunities. The expansion of blockchain applications across industries underscores its versatility and potential to address a wide range of business sustainability challenges. From financial services to logistics and beyond, enterprises are using blockchain technology to streamline operations, reduce costs and improve security. Whether by implementing decentralized financial solutions, tokenization platforms or transparency in supply chains, blockchain encourages innovation and new paradigms of value exchange and collaboration. Moreover, blockchain has enabled the emergence of decentralized autonomous organizations, self-governing entities governed by smart contracts, enabling new forms of collaboration, value creation and organizational management. However, blockchain's most influential applications will require close collaboration between developers, innovators, and regulators, which adds complexity and delays implementation but ensures quality and security (McWaters, 2016).

3.1. Sustainable international payments

One of the most common payment methods in international business is the international documentary letter of credit (LC). It represents an irrevocable obligation of the buyer's bank to the seller, provided that all stipulated documents and conditions are met (Lazibat et al., 2020). LCs minimize risk for both exporters and importers who may not know or trust each other. The seller is assured of receiving payment on time and in full, as the buyer's bank guarantees the payment, acting as a neutral third party.

Conversely, the buyer is assured that the goods will be shipped according to agreed specifications before making a payment, as the seller must present documents proving the delivery and conditions met to receive the payment. Thus, LCs facilitate international trade by building trust and reducing risks for both parties involved in the transaction. However, traditional LCs have notable disadvantages, such as high costs and slower transaction speeds, making them unsuitable for lower-value transactions. Blockchain technology can significantly enhance the sustainability and efficiency of international payment methods like LCs by using smart contracts. Smart contracts can be programmed to comply with all agreed terms between seller and buyer, automating key steps in the credential process and ensuring payments upon document verification (Monrat et al., 2019). This automation reduces manual work and the possibility of human error. Blockchain's secure and shared network allows real-time access to documents, significantly decreasing processing time. By simplifying the process with digital credentials on a blockchain, all authorized parties can access the documents simultaneously, enhancing efficiency. Additionally, blockchain can eliminate intermediaries from the transaction, reducing transaction costs for both buyers and sellers. Blockchain's cryptographic security ensures data immutability, making it resistant to unauthorized interventions and reducing the risk of fraud. Increased transparency is achieved as all participants on the blockchain network can see the status of credentials throughout the process. In summary, blockchain technology can transform the traditional LC process, making it more sustainable by reducing costs, increasing speed, enhancing security, and providing greater transparency. This technological advancement aligns with broader sustainability goals by streamlining international trade processes and reducing the environmental footprint associated with paper-based transactions and manual processing.

3.2. Tokenization and sustainable asset management

Asset tokenization involves representing property rights as digital tokens stored on the blockchain, enhancing sustainability in asset management. These tokens act as digital certificates of ownership and can represent almost any object of value, including physical, digital, interchangeable, and irreplaceable assets. Tokenization provides increased liquidity for traditionally illiquid assets, greater transparency regarding ownership history, and reduced administrative costs (Chainlink, 2023). Tokenization enables fractional ownership and universal access to investment opportunities, democratizing investment and reducing the need for physical transactions, thus lowering the environmental footprint associated with asset management. It allows partial ownership, enabling assets to be divided into millions or billions of tokens that can be traded on various exchanges. This increases liquidity and expands the potential number of customers, while reducing the reliance on expensive transaction intermediaries (Sazandrishvili, 2020). In traditional markets, financial events are typically recorded in isolated books, leading to inefficiencies such as increased costs and prolonged settlement times. By using blockchain, tokenization allows for open monitoring and revision of ownership records, significantly reducing investment security risks and the potential for fraud. This transparency is particularly beneficial in industries prone to counterfeiting, ensuring that assets are sustainably sourced and managed. Tokenization's ability to provide reliable and easily accessible information about ownership history, sales history, defect history, and other key data supports informed economic decisions. Tracking origins on the blockchain ensures immutable records, minimizing the need for trust in record-keeping and significantly reducing the risk of fraud. This transparency and security align with broader sustainability goals, ensuring that assets are managed efficiently and ethically (Chainlink, 2023). By enhancing liquidity, democratizing investment, and ensuring transparent and secure management of assets, tokenization contributes significantly to sustainable asset management practices.

This innovative approach supports the long-term viability and ethical sourcing of assets, aligning with the principles of sustainable development.

3.3. Transparent and sustainable supply chain

In response to increasing consumer demand for ethical procurement and sustainable products, achieving supply chain transparency has become a critical goal in logistics. Blockchain technology offers a compelling solution by enabling real-time visibility, product origin authentication, and regulatory compliance. This transparency increases trust and accountability across the supply chain, fostering greater consumer confidence and brand loyalty. Blockchain's decentralized and secure nature provides an alternative to existing anti-counterfeiting mechanisms. By allowing all supply chain stakeholders to access and authenticate product information without relying on a centralized entity, blockchain enhances transparency and reduces the risk of fraud. This system supports ethical procurement practices, ensuring sustainable sourcing and reducing the environmental footprint of logistics operations. An illustrative example of blockchain's application in a sustainable supply chain is the traceability of organic cotton, as presented by Agrawal et al. (2021). In this system, each step from farm to finished product is monitored through a blockchain network, ensuring the authenticity and sustainability of organic cotton. Certified growers add organic cotton to the blockchain, and subsequent transactions are updated as the cotton is processed into yarn, fabric, and finally, clothing. Each transaction includes unique traceability identifiers, providing a transparent and immutable record of the product's journey. This approach can be replicated across various industries, offering complete traceability and security of information. Thus, blockchain technology plays a crucial role in promoting sustainability by ensuring that every step in the production process is transparent, traceable, and secure, giving end users confidence in the origin and quality of the products they purchase.

3.4. Decentralized autonomous organizations (DAOs) and sustainability

Decentralized autonomous organizations (DAOs) represent an innovative approach to organizational governance, leveraging blockchain technology to enable transparent and autonomous operations. DAOs are self-governing entities programmed as smart contracts, which can execute tasks and make decisions without central control. This decentralized approach reduces the need for physical infrastructure and central administration, contributing to more sustainable business models (Hassan & De Filippi, 2021). DAOs are usually funded through initial coin offerings and governed by token holders, who vote on project proposals and resource allocation. This decentralized decision-making process can lead to more democratic and sustainable management practices, aligning with broader sustainability goals. By distributing power and decision-making authority among token holders, DAOs promote bottom-up interaction, coordination, and collaboration between distributed network nodes. This structure minimizes trust needed, communication, and transaction costs, enhancing overall organizational efficiency and sustainability (Wang et al., 2019). DAOs strive to be virtual, transparent, democratic, and autonomous. Given that all processes occur online, and members are geographically dispersed, they rarely meet in person. Traditional organizations follow a top-down hierarchy with centralized authority, whereas DAOs operate on principles of equality, voluntariness, reciprocity, and mutual benefit. In an ideal DAO, governance is decentralized, and organizational actions are coordinated and orderly through the autonomy of the community. The reliance on smart contracts ensures that operating rules, accountability, authority, and reward conditions are open and transparent, accurately distinguishing the rights and interests of participants. DAOs can fund various projects, from investing or grants to media and entertainment, with many opting to manage decentralized finance (DeFi) protocols.

Successful examples include AAVE, one of the largest DeFi protocols, which allows borrowers and lenders to interact without a centralized intermediary. Conversely, some projects, like ConstitutionDAO, have faced challenges despite raising significant funds (Chainalysis, 2023; Reiff, 2023). By promoting decentralized governance and sustainable management practices, DAOs support broader sustainability goals, ensuring transparent, autonomous, and efficient operations. This innovative approach to organizational structure aligns with the principles of sustainable development, reducing the environmental impact and enhancing the long-term viability of organizations.

4. CONCLUSION

Blockchain technology signifies a transformative leap in the digitalization of ownership and transactions, providing a wide array of applications that align with and enhance sustainability across various business processes. Its fundamental features—decentralization, transparency, immutability, security, consensus mechanisms, privacy, and smart contracts—address enduring challenges in digital transactions and data management, delivering a secure and immutable ledger that guarantees trust and integrity. The historical development of blockchain, from early concepts by Haber and Stornetta to the pioneering work of Nakamoto's Bitcoin and the innovations brought by Ethereum, highlights the evolving and collaborative nature of this technology. Each milestone has expanded the scope and application of blockchain, demonstrating its versatility and resilience in addressing complex problems. Practical applications of blockchain in sustainable business are evident in areas such as international payments, supply chain management, decentralized autonomous organizations (DAOs), and asset tokenization. These use-cases illustrate how blockchain can streamline operations, enhance security, and foster innovation. For instance, blockchain technology can transform traditional letter of credit processes, making them more efficient and reducing environmental impact. It can also ensure supply chain transparency, promoting ethical sourcing and reducing carbon footprints. DAOs offer a sustainable model for organizational governance, while tokenization democratizes investment opportunities and enhances the transparency and security of asset management. As blockchain technology continues to mature, its integration into mainstream applications can be expected to increase, driven by ongoing research, regulatory developments, and growing acceptance by public and institutional stakeholders. The collaborative efforts of developers, innovators, and regulators will be crucial in overcoming challenges and maximizing the benefits of blockchain, paving the way for a more secure, transparent, and decentralized digital future. Blockchain's potential to drive innovation and sustainability across various industries is increasingly evident. By promoting transparency, reducing inefficiencies, and supporting sustainable business practices, blockchain technology stands as a pivotal tool in the transition towards a more sustainable and equitable global economy.

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HOW TO ASSESS DIGITAL TRANSFORMATION READINESS

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ABSTRACT

The dynamic evolution of technology over the past two decades has significantly influenced business models and value creation within companies. In today's competitive landscape, the ability to adapt quickly to environmental changes through digital transformation is critical for maintaining or enhancing profitability, revenue, market share, and overall business value. This paper explores the assessment of digital readiness as a fundamental step in the digital transformation process. Through a structured approach to the process of digital readiness assessment that includes both quantitative and qualitative methods, key aspects such as current digital maturity, identified barriers, stakeholder perceptions, technology adoption, innovation culture, leadership vision, skills and training needs, digital infrastructure, and strategic alignment were analysed. The study leverages a comprehensive digital readiness survey conducted across 60 companies, providing valuable insights into the preparedness of companies for digital transformation. The results highlight critical areas for improvement and offer actionable recommendations to guide companies in their journey towards becoming digitally mature enterprises. Understanding these components allows Chief Transformation Officers (CTOs) and other stakeholders to develop effective strategies that address specific challenges and capitalize on opportunities within their digital transformation efforts.

Keywords: Digital Readiness, Digital Readiness Assessment, Digital Readiness Survey, Digital Transformation

1. INTRODUCTION

The significant and unpredictable changes in technology development over the last twenty years are one of the key reasons for changes in business models and the way companies create value. Compared to fifteen years ago, when the global economy was dominated by financial institutions and companies that based their value on the processing and exploitation of certain natural resources, today the most valuable companies are those that base their business model on disruptive innovations and rapid adaptation to changes occurring in the environment. Therefore, the question arises of how to organize a company to be a leader in innovation, i.e., to be able to efficiently adapt its strategic actions to changes in the environment. In this context, we can say that digital transformation is a journey that a company undergoes with the aim of becoming a digital enterprise that has developed competencies for quick and efficient adaptation to environmental changes based on continuous innovations in the way content is created, delivered, and valued by customers.¹ Digital transformation is a long-term process, always beginning and ending with human resources, organization, organizational culture, and, of course, a large number of different technological elements. Every transformation, including digital transformation, is a difficult and challenging process without a guarantee of success, as best demonstrated by the IMD research showing that 87% of analyzed digital transformation programs did not achieve the desired results². Logically, the question arises as to why the owners and/or management of companies decide to implement digital transformation.

¹ Furr, N., Shipilov, A., Rouillard, D., Hemon-Laurens, A. (2022). *The 4 Pillars of Successful Digital Transformations*. Harvard Business Review. Retrieved 25.03.2024 from <https://hbr.org/2022/01/the-4-pillars-of-successful-digital-transformations>

² Wade, M., Shan, J. (2020). *Covid-19 Has Accelerated Digital Transformation, but May Have Made It Harder Not Easier*. MIS Quarterly Executive, Vol.19, No.3, pp. 213-2020.

Analyzing digital disruption in various economic sectors over the past 25 years, it can be concluded that there is no sector that has not been strongly influenced by disruption based on technological innovations. This is also confirmed by the research Digital Vortex 2023 Report conducted by IMD, which shows that "technology products and services, education, financial services, and telecommunications are the most susceptible industries."³ These industries share common characteristics that make them vulnerable to digital disruption, such as their ability to digitize core offerings and services and their reliance on business-to-consumer (B2C) models. In contrast, business-to-business (B2B) industries on the periphery of the vortex are less affected by disruption but run the risk of being unexpectedly pulled into the center.⁴ Given the above, we can conclude that the implementation of digital transformation is inevitable for most companies if they want to maintain or increase profitability, revenue, market share, development perspective, and ultimately, business value. Every process has certain elements that are considered important to achieve the defined goal. What we can relatively safely define is the starting and ending points of the process, but what happens during the journey is a more complex question. This is primarily due to our tendency and limited ability to conceptualize, that is, to represent the complex interrelationships between variables that need to be displayed to explain a certain phenomenon. Precisely because of this, we tend to represent every process as a set of linear elements with very simple interrelationships. In line with the above, the digital transformation process can be divided into five key phases: (1) preparation, (2) creation of a digital business model, (3) defining the digital transformation strategy, (4) operational plan for managing the digital transformation process, and (5) defining indicators and measurement systems for the success of digital transformation with recommendations. The phases are connected and interdependent and consist of various elements that, depending on the current state of the company's digital capability, play a more or less important role in the success of the company's transformation. This paper specifically focuses on the first phase, that is, answering the question of how to prepare well for digital transformation. If we skip this step, the likelihood of failure is higher, and we will constantly have to return to the beginning and fix or improvise something. For this reason, the first preparatory step involves a clearly defined vision and development strategy of the company, which is the basis for the second preparatory element, and that is clearly defined transformational goals that will articulate the aspirations and business goals of the company expected to be realized by implementing digital business transformation. The basic "motivation" for digital transformation is technological disruption, i.e., major technological innovations. However, the solution to the problem often lies not in technology but in finding ways to motivate employees and management to actively participate in the transformation process, that is, how to create an organizational culture and a positive internal environment for initiating digital transformation.⁵ Companies are in different business-digital cycles. Thus, some companies have digital activities underway, some have certain experience with the digital economy, while in some situations, companies are just considering the first steps of digitalization. Therefore, determining the level of digital readiness of the company can be considered the zero point of the digital transformation process. A well-conducted analysis of the company's digital readiness will give us clear guidelines for defining the digital business model and operational management of the transformation process. This paper analyzes the process of assessing the digital readiness of companies with a clear description of the components of the process, i.e., key areas of assessment and the most commonly used methods, and presents the results of quantitative research on the assessment of companies' readiness for

³ Lin, Y., Shan, J. (2023). *Digital Vortex 2023: Taiwan vs. Global Trends*. Lausanne, Switzerland: International Institute for Management Development. Retrieved 14.04.2024 from <https://www.imd.org/ibyimd/strategy/digital-vortex-2023-revealed/>

⁴ Lin, Y., Shan, J. (2023). *Digital Vortex 2023: Taiwan vs. Global Trends*. Lausanne, Switzerland: International Institute for Management Development. Retrieved 14.04.2024 from <https://www.imd.org/ibyimd/strategy/digital-vortex-2023-revealed/>

⁵ Frankiewicz, B., Chamorro-Premuzic, T. (2020). *Digital Transformation Is About Talent, Not Technology*. Harvard Business Review. Retrieved 10.04.2024 from <https://hbr.org/2020/05/digital-transformation-is-about-talent-not-technology>

digital transformation. The research was conducted to gain a clearer picture of companies' readiness for digital transformation, and its results can help Chief Transformation Officers (CTOs) gain a general insight into critical areas that will require more interventions and efforts during the operational implementation of digital transformation. The results of the conducted analysis of digital readiness are crucial for all other phases of the process, and the intensity and structure of the qualitative part of the digital readiness analysis depend on them.

2. ASSESSMENT OF A COMPANY'S DIGITAL READINESS FOR DIGITAL TRANSFORMATION

Assessing the readiness of a company for digital transformation is an essential part of the first phase of the digital transformation process. It involves determining and analyzing the current state across key areas and assessment variables, including current digital maturity, identified barriers, stakeholder perceptions, technology adoption, innovation culture, leadership vision, skills and training needs, digital infrastructure, and strategic alignment.⁶ This key aspects/variables of business that are analyzed to assess the company's readiness for digital transformation can be grouped into the following categories⁷:

- Leadership and vision: understanding of the digital direction set by leaders is determined and evaluated
- Technology adoption: current use and future plans for technology are determined and evaluated
- Skills and training needs: gaps in digital skills and training needs are determined
- Digital mindset and culture: openness to change and innovation is determined and analyzed
- Digital infrastructure: the adequacy of current digital tools and platforms is determined.

2.1. Methods for Digital Readiness Assessment

Both quantitative and qualitative methods are used to assess the digital readiness of a company. Among quantitative methods, the survey questionnaire method is most commonly used. Responses from the survey can be statistically analyzed to derive scores that represent the digital maturity levels of the different departments/priority areas and the organization as a whole. These scores can be used to identify areas of strength and potential improvement, informing targeted interventions for digital upskilling and strategic planning for technology investments. When conducting such surveys, consulting existing frameworks like the Digital Competence Framework for Citizens can offer valuable guidelines and established metrics to measure digital competence effectively⁸.

⁶ Aras, A., and Büyüközkan, G. (2023). *Digital Transformation Journey Guidance: A Holistic Digital Maturity Model Based on a Systematic Literature Review*. Systems, 11(4), 213. Retrieved 18.04.2024 from <https://www.mdpi.com/2079-8954/11/4/213>; Haffke, I., Kalgovas, B.J., and Benlian, A. (2016). *The Role of the CIO and the CDO in an Organization's Digital Transformation*. ICIS 2016 Proceedings. Retrieved 20.04.2024 from <https://aisel.aisnet.org/icis2016/ISSStrategy/Presentations/3/>; Vial, G. (2019). *Understanding digital transformation: A review and a research agenda*. The Journal of Strategic Information Systems, Vol.28, No.2, pp. 118-144. Retrieved 20.04.2024 from <https://www.sciencedirect.com/science/article/pii/S096386871830190X>.

⁷ Wade, M., Bonnet, D., Yokoi, T., Obwegeser, N. (2022). *Hacking Digital – Best Practices to Implement and Accelerate Your Business Transformation*. New York City: McGraw Hill.

⁸ Hess, T., Matt, C., Benlian, A., and Wiesböck, F. (2016). *Options for formulating a digital transformation strategy*. MIS Quarterly Executive, 15(2). Retrieved 10.03.2024 from <https://misq.org/exec/>; Westerman, G., Bonnet, D., and McAfee, A. (2014). *Leading Digital: Turning Technology into Business Transformation*. Harvard Business Review Press. Retrieved 10.03.2024 from <https://hbr.org/product/leading-digital-turning-technology-into-business-transformation/10121-PBK-ENG>; Vial, G. (2019). *Understanding digital transformation: A review and a research agenda*. The Journal of Strategic Information Systems, 28(2), pp. 118-144. Retrieved 10.03.2024 from <https://www.sciencedirect.com/science/article/pii/S096386871830190X>; Aras, A., and Büyüközkan, G. (2023). *Digital Transformation Journey Guidance: A Holistic Digital Maturity Model Based on a Systematic Literature Review*. Systems, 11(4), 213. Retrieved 10.03.2024 from <https://www.mdpi.com/2079-8954/11/4/213>; Deloitte Insights (2023). *A new approach to digital transformation*. Retrieved 24.04.2024 from <https://www2.deloitte.com/insights/us/en/focus/digital->

A Digital Readiness Survey should consist of a balanced mix of multiple-choice questions (MCQs) and dichotomous items (yes/no, true/false) to accurately measure the competencies and readiness of individuals in a digital context. When analyzing data from Digital Readiness Surveys, following established best practices ensures that you extract meaningful insights and that your analytical framework can be repeated and refined over time. To perform a Digital Readiness Survey, it is important to properly handle the data through high-level processes of: 1) Data Cleaning (ensuring completeness and consistency, and identifying statistical outliers), 2) Data Analysis (using descriptive tools, cross-tabulation, gap analysis, and frequency distribution), and 3) Data Interpretation (reviewing open-ended responses, as well as correlation and regression analysis).⁹ Data obtained from the survey questionnaire are often used for Gap Analysis across five key domains pertinent to digital transformation. For each domain, the 'Current State' column describes the organization's existing conditions or capabilities. The 'Desired State' column articulates the optimal conditions or capabilities that align with the organization's strategic objectives for digital transformation. The 'Gap' column explicitly outlines the deficiencies or differences between the current and desired states. Finally, the 'Action Items' column provides a set of strategic actions necessary to bridge the identified gaps. This structured approach enables a clear understanding of the required changes and facilitates the development of a targeted action plan to transition effectively to a digitally mature enterprise. Each gap identified through Gap Analysis underscores an opportunity for growth and is matched with actionable steps to achieve the desired digital competencies and infrastructure. Qualitative research in digital transformation focuses on understanding the human elements, organizational culture, and change management processes that quantitative data alone cannot fully capture. Among qualitative methods for assessing the readiness of a company for digital transformation, the most commonly used are: 1) in-depth interviews, 2) case studies, 3) focus groups, and 4) document analysis. Conducting detailed interviews targeting a broad spectrum of stakeholders, from C-suite executives to frontline employees, provides diverse perspectives on the digital transformation journey. Each of these stakeholders can provide a unique perspective that is vital for a holistic understanding of digital transformation's implications and ensuring that the transformation strategy is comprehensive, actionable, and has buy-in from all parts of the organization. These interviews help identify success factors, barriers, and the overall impact of digital strategies on daily operations. The key is to ensure that the sample of interviews represents the diverse perspectives within the organization and provides enough data to inform the transformation strategy effectively.¹⁰ Analyzing case studies of organizations that have undergone digital transformation offers practical insights and lessons learned, helping to understand the strategic, tactical, and operational elements that contribute to the success or failure of digital initiatives. Engaging directly in the environments where digital transformation occurs allows researchers to observe firsthand the implementation of digital tools and the subsequent cultural shifts.¹¹ This method is particularly useful for capturing real-time reactions and adaptations by the workforce.

maturity-model.html; McKinsey & Company (2023). *What is digital transformation?* Retrieved 24.04.2024 from <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/what-is-digital-transformation>.

⁹ Vuorikari, R., Kluzer, S., and Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*. Luxembourg: Publications Office of the European Union. Retrieved 24.03.2024 from <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>.

¹⁰ Vial, G. (2019). *Understanding digital transformation: A review and a research agenda*. The Journal of Strategic Information Systems, 28(2), pp. 118-144. Retrieved 10.03.2024 from <https://www.sciencedirect.com/science/article/pii/S096386871830190X>.

¹¹ Vial, G. (2019). *Understanding digital transformation: A review and a research agenda*. The Journal of Strategic Information Systems, 28(2), pp. 118-144. Retrieved 10.03.2024 from <https://www.sciencedirect.com/science/article/pii/S096386871830190X>; Westerman, G., Bonnet, D., and McAfee, A. (2014). *Leading Digital: Turning Technology into Business Transformation*. Harvard Business Review Press. Retrieved 20.03.2024 from <https://hbr.org/product/leading-digital-turning-technology-into-business-transformation/10121-PBK-ENG>.

Organizing focus groups with employees from various departments can uncover collective insights about the digital transformation experience, including shared challenges and the effectiveness of communication across the organization. Reviewing internal documents, such as project plans, training materials, and digital strategy documents, provides a backdrop against which the qualitative findings can be assessed. This helps in validating the alignment of stated goals with actual practices and outcomes. When we are talking about documentation, to conduct a successful digital transformation project, we split necessary documentation into two groups: 1) must-have documentation (such as technology roadmaps, governance model, communication plan, performance metrics, and post-implementation review) and 2) good-to-have documentation (such as risk management and stakeholder analysis, business case for digital initiatives, IEEE standards for software requirements, and change management plan).¹²

3. RESEARCH ON COMPANY READINESS FOR DIGITAL TRANSFORMATION

To gain a preliminary insight into the critical areas that will require more interventions and efforts during the operational implementation of digital transformation, a quantitative study was conducted, and the results are presented in this paper.

3.1. Research methodology

The data for this research were collected through a comprehensive online digital readiness survey - DxReadiness.com, across 60 companies. The objective of the research was to assess various aspects of digital transformation readiness, including current digital maturity, identified barriers, stakeholder perceptions, technology adoption, innovation culture, leadership vision, skills and training needs, digital infrastructure, and strategic alignment. The survey contained 93 questions across 5 different domains: (1) Strategy – leadership and vision, (2) Technology – technology adoption, (3) Operations – skills and training, (4) Culture - digital mindset and culture, and (5) Data – digital infrastructure. The survey was distributed to key stakeholders within each company, including C-suite executives, IT managers, and frontline employees, and was conducted over a period of three months (from 11/2023 to 02/2024). The responses were collected and analyzed using statistical methods to derive average scores and standard deviations for each criterion. The maximum and minimum values (5 and 1, respectively) provide a range for evaluating each criterion. The criteria used for this research are essential components of digital transformation readiness, covering aspects from technological adoption and infrastructure to leadership vision and stakeholder support. By understanding and summarizing these values and criteria, companies can better assess their current state and identify specific areas for improvement to enhance their readiness for digital transformation. The key variables, or areas of assessment, or the criteria for evaluating the digital readiness of companies used in this research are:

- 1) **Current Digital Maturity:** Assessment of current digital maturity gives an insights of the overall level of digital integration within the company, providing a baseline for understanding how advanced the company's digital capabilities are
- 2) **Barriers:** Identifying and understanding barriers is crucial for addressing and overcoming obstacles that hinder digital transformation efforts.
- 3) **Stakeholder Perceptions:** The support and perception of stakeholders, including employees and management, are vital for the successful implementation of digital initiatives. This criterion measures the level of buy-in and support from key stakeholders

¹² Reis, J., Amorim, M., Melão, N., and Matos, P. (2018). *Digital transformation: a literature review and guidelines for future research*. *Advances in Intelligent Systems and Computing*, 745, pp. 411–421. Retrieved 05.04.2024 from https://link.springer.com/chapter/10.1007/978-3-319-77703-0_41; Hess, T., Matt, C., Benlian, A., and Wiesböck, F. (2016). *Options for formulating a digital transformation strategy*. *MIS Quarterly Executive*, 15(2). Retrieved 20.03.2024 from <https://misq.org/exec/>; Smart Insights. (2023). *How to structure an effective digital transformation plan*. Retrieved 20.03.2024 from <https://www.smartinsights.com/manage-digital-transformation/>

- 4) **Technology Adoption:** Evaluates how effectively the company adopts new technologies, which is essential for staying competitive and innovative in the digital age
- 5) **Innovation Culture:** An innovation culture fosters creativity and openness to new ideas, which is crucial for continuous improvement and adaptation in a rapidly changing digital landscape
- 6) **Leadership Vision:** Strong leadership vision is necessary to guide and inspire the organization through digital transformation. It ensures that there is a clear strategic direction and commitment to change
- 7) **Skills and Training Needs:** Assesses the level of digital skills among employees and the adequacy of training programs. Ensuring employees are well-equipped with the necessary skills is critical for successful digital transformation
- 8) **Digital Infrastructure:** Evaluates the current state of the company's IT infrastructure, which needs to be modern, scalable, and flexible to support digital initiatives
- 9) **Strategic Alignment:** Measures how well digital initiatives align with the company's overall business strategy, ensuring that digital transformation efforts are coherent and support the broader organizational goals.

In the context of the quantitative analysis of digital transformation readiness, each criterion is rated on a scale from 1 to 5. A score of 5 indicates the highest level of readiness or performance in that criterion. It signifies that the company excels in that area, demonstrating optimal practices and outcomes. Companies scoring a 5 in a criterion such as "Technology Adoption" would be seen as leaders in adopting and integrating new technologies effectively. They would have advanced digital tools and processes in place and face minimal challenges in this area. A score of 1 represents the lowest level of readiness or performance in that criterion. It signifies that the company is significantly lacking in that area and requires substantial improvement. Companies scoring a 1 in a criterion such as "Leadership Vision" would indicate *poor leadership* support and a lack of clear vision for digital transformation. This would suggest that leadership is not adequately driving the digital change necessary for the company's success.

3.2. Results

This quantitative analysis provided insights into the current readiness of companies for digital transformation and highlights key areas for improvement. The survey results are presented and interpreted below, showing the average values and standard deviations for the defined criteria/variables of assessment.

Variable	Average Value
Current Digital Maturity	2.83
Identified Barriers	2.53
Stakeholder Perceptions	2.62
Technology Adoption	2.60
Innovation Culture	2.36
Leadership Vision	2.18
Skills and Training Needs	2.52
Digital Infrastructure	2.63
Strategic Alignment	2.57

Table 1: Average Values by Criteria of assessment

The average score is 2.83 for Current Digital Maturity indicating a medium level of digital maturity among the companies. The barriers are rated at an average of 2.53, suggesting moderate obstacles to digital transformation.

With an average of 2.62, stakeholder perceptions vary but generally support digital transformation. Average scores of 2.60 and 2.57 for Technology Adoption and Innovation Culture indicate areas needing improvement in technology adoption and promoting an innovation culture. With an average score of 2.18 for Leadership Vision, leaders need to further develop their vision for digital transformation. With an average of 2.52, there is a clear need for training and developing digital skills. An average score of 2.63 for Digital Infrastructure indicates a need for modernization of the infrastructure. With an average of 2.57, strategic alignment is moderate and requires additional efforts to fully align digital initiatives with business goals. In addition to the average values of the assessment criteria, it is useful to gain insight into the standard deviation of the assessment criteria, which helps us to understand, in the context of our study on digital transformation readiness, how much the responses from different companies deviate from the average (mean) score for each criterion.

Variable	Standard Deviation
Current Digital Maturity	1.13
Identified Barriers	1.08
Stakeholder Perceptions	1.21
Technology Adoption	1.05
Innovation Culture	1.06
Leadership Vision	1.07
Skills and Training Needs	1.12
Digital Infrastructure	1.09
Strategic Alignment	1.07

Table 2: Standard Deviation by Criteria of assessment

The standard deviation of 1.13 for Current Digital Maturity indicates a moderate spread of responses. While most companies might rate their digital maturity similarly, there are still some variations in their levels of integration. A standard deviation of 1.08 for Identified Barriers suggests that most companies face similar barriers, but the impact and perception of these barriers can vary slightly. With a standard deviation of 1.19, stakeholder perceptions show more variability. This means that while some stakeholders might be very supportive of digital transformation, others might be more skeptical or resistant. The standard deviation of 1.05 for technology adoption indicates relatively consistent experiences among companies, with most having similar levels of technology adoption. A standard deviation of 1.06 for Innovation Culture suggests that while most companies have similar attitudes towards innovation, there are some differences in how they cultivate an innovation culture. The standard deviation of 1.07 for Leadership Vision points to varying degrees of clarity and commitment in leadership's vision for digital transformation. Some companies may have very clear and strong leadership support, while others may not. With a standard deviation of 1.12, there is noticeable variability in the adequacy of training programs and digital skills among employees in different companies. A standard deviation of 1.09 for Digital Infrastructure indicates differences in the state of digital infrastructure across companies, with some having modern, scalable systems and others lagging behind. The standard deviation of 1.07 for strategic alignment shows that while many companies are moderately aligned in their digital and business strategies, there are differences in how well these strategies are integrated. Companies can use these insights to benchmark their performance against the average and understand where they stand relative to their peers. Understanding the variability in readiness helps in strategic planning, allowing companies to focus on specific areas that require more attention and resources. By interpreting the standard deviation with average scores, companies can gain a deeper understanding of their digital transformation readiness and develop more effective strategies to address their unique challenges and opportunities.

4. CONCLUSION

Digital business transformation in today's dynamic business environment is no longer optional but essential for companies aiming to sustain or enhance their market position, profitability, and overall business value. The journey towards digital transformation begins with a thorough assessment of a company's digital readiness, which involves evaluating current digital maturity, barriers, stakeholder perceptions, technology adoption, innovation culture, leadership vision, skills and training needs, digital infrastructure, and strategic alignment. This paper highlights the importance of a structured approach to assessing digital readiness. By employing both quantitative and qualitative methods, companies can gain a comprehensive understanding of their current state and identify critical areas for improvement. Quantitative data provides a broad overview, while qualitative insights offer a deeper understanding of the underlying challenges and opportunities. The findings of the study underscore that digital transformation is a multifaceted process that requires a clear vision and strong leadership. It is evident that companies need to cultivate an innovation-friendly culture and invest in continuous skills development to empower their workforce. The role of leadership is pivotal, as leaders must not only set a strategic direction but also inspire and motivate the organization to embrace change. The analysis reveals that while technology adoption is crucial, it is equally important to ensure that digital infrastructure is modern, scalable, and flexible to support digital initiatives. The alignment of digital strategies with overall business goals is essential for achieving coherent and effective transformation efforts. One of the key takeaways from this research is the variability in readiness levels among companies, which suggests that a one-size-fits-all approach to digital transformation is ineffective. Instead, companies must tailor their strategies to address specific gaps identified through a detailed assessment process. The use of standardized frameworks and best practices can guide companies in developing robust transformation plans that are both actionable and measurable. In conclusion, digital transformation is a complex but indispensable journey for companies aiming to thrive in the modern digital economy. By systematically assessing and addressing their digital readiness, companies can navigate this journey more effectively, ensuring that they are well-equipped to adapt to the ever-evolving technological landscape and capitalize on new opportunities for growth and innovation. The insights and recommendations provided in this paper serve as a valuable resource for Chief Transformation Officers (CTOs) and other stakeholders, helping them to steer their organizations towards a successful digital future.

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FOREIGN FINANCIAL INVESTMENTS (FDI) AND CRIMINAL LAW PROTECTION OF INVESTORS

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ABSTRACT

Direct Financial Investments (FDI)¹ play a crucial role in economic development, bringing capital, technology, and expertise. However, to encourage FDI, effective criminal law protection for investors is necessary. In the Republic of Croatia, several key criminal law institutes provide this protection, creating a secure and attractive business environment. The Criminal Code of the Republic of Croatia prescribes criminal offenses such as fraud, embezzlement, and abuse of trust in economic operations, providing basic legal protection against illegal activities that may threaten investors' interests. The Companies Act further protects the rights of shareholders and company members, prescribing the liability of management board members and supervisory board members for damage caused to the company. The Capital Market Act regulates the capital market, preventing manipulation and insider trading, and ensures transparency through the obligation to disclose relevant information. The Anti-Money Laundering and Terrorist Financing Act introduces measures to prevent money laundering, requiring financial institutions to conduct due diligence on clients and report suspicious transactions. Finally, the Competition Act prevents abuse of market position and cartel agreements, ensuring fair market conditions. Compliance with European directives further strengthens the criminal law protection of investors in Croatia. Directives such as the Anti-Money Laundering Directive, the Markets in Financial Instruments Directive (MiFID II), and the Transparency Directive set standards for investor protection, market transparency, and the integrity of financial markets. This paper analyzes the impact of criminal law protection on FDI, highlighting the importance of legal security and the efficiency of the judicial system in creating a favorable investment environment. In conclusion, recommendations for improvement include legislative changes and institutional reforms that will further strengthen investor protection and attract more FDI.

Keywords: *Criminal Law Protection, Foreign Financial Investments (FDI), Investors, Legal Framework, Republic of Croatia*

1. INTRODUCTION

Foreign Direct Investments (FDI) play a crucial role in stimulating a country's economic growth and development, bringing not only capital but also much-needed technologies, innovations, and expertise. Foreign direct investments are an integral part of the balance of payments, encompassing equity investments, retained earnings, and debt relations between related resident and non-resident entities. Equity investments are those where a foreign owner acquires at least a 10% stake in the share capital of a company. FDIs enable the creation of new jobs, increased competitiveness, and the improvement of economic infrastructure.

¹ Foreign Direct Investment (FDI) refers to the purchase of assets in another country, granting the buyer direct control over those assets (e.g., purchasing land and buildings). In other words, it is an investment in the form of controlling ownership in a business, real estate, or production facilities such as factories in one country by an entity based in another country (https://en.wikipedia.org/wiki/Foreign_direct_investment).

However, to be an attractive destination for foreign investors, a country must ensure a stable, transparent, and secure business environment. In the Republic of Croatia, legal security and investor protection are based on a comprehensive legal framework that includes the Criminal Code, the Companies Act, the Capital Market Act, the Anti-Money Laundering and Terrorist Financing Act, and the Competition Act. These laws are harmonized with European directives and set high standards for investor protection, the prevention of illegal activities, and the assurance of fair market conditions. The Criminal Code of the Republic of Croatia prescribes criminal offenses such as fraud, embezzlement, and abuse of trust in economic operations, providing fundamental protection for investors against illegal activities. The Companies Act protects the rights of shareholders and company members, ensuring responsibility and transparency in corporate governance. The Capital Market Act regulates activities in the capital market, preventing manipulation and ensuring the timely disclosure of relevant information to investors. The Anti-Money Laundering and Terrorist Financing Act introduces mandatory measures to prevent money laundering, while the Competition Act ensures fair market conditions by preventing the abuse of market position and cartel agreements. Compliance with European directives further strengthens legal security and investor confidence, which is crucial for attracting FDI. The aim of this paper is to thoroughly investigate how criminal law protection of investors affects direct financial investments in the Republic of Croatia. The paper will analyze the legal framework, protection mechanisms, and the positive and negative impacts of these measures on the investment environment. It will also present recommendations for improving criminal law protection of investors to increase Croatia's attractiveness as a destination for foreign investments. This introduction provides an overview of the key aspects to be addressed in the paper, highlighting the importance of criminal law protection in creating a favorable investment environment and attracting FDI.

2. DIRECT INVESTMENTS BY COUNTRY

The Croatian National Bank began research on foreign direct investments in 1997, when companies provided data on equity investments for the period from 1993 to 1996. However, data on retained earnings and other direct investment capital, including debt relations between related residents and non-residents, were not available for that period and only became accessible after the research commenced. Since 1999, the collection of data on debt relations within direct investments has been based on the records of debt relations with abroad within the statistics of foreign debt. Transactions related to the purchase and sale of real estate are also part of direct investments. Therefore, in 2007, the Statistics Directorate of the Croatian National Bank launched a survey on real estate transactions on Croatian territory by non-residents. Public notaries, who become aware of such transactions in their regular business operations, were required to report for this survey. Data on real estate transactions by Croatian residents abroad were collected until the end of 2010 within the payment system with abroad, and since 2011, they have been collected through the Report on Real Estate Transactions Abroad. As of October 31, 2014, the Croatian National Bank began publishing data in the field of statistics on relations with abroad (balance of payments, foreign debt, and international investment position) according to the methodology of the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6). The introduction of the new statistical standard also changes the presentation of direct investments. Direct investments are no longer classified according to the direction of investment (into Croatia and abroad) but according to the Assets/Liabilities principle. Furthermore, direct investments are divided into three categories: direct investments in the direct investment enterprise, known as "ordinary" direct investments; reverse investment, which includes investments of less than 10% in the capital of the direct investor or various forms of loans such as credits and promissory notes; and investments between horizontally related enterprises.

The latter refers to investments where the investor holds less than 10% of the capital, and it is part of the same group of companies as the reporting entity (Primorac, Smoljić, 2011). A group of companies consists of legal entities directly or indirectly managed by a single legal or natural person. The previous methodology included this type of investment in the data but did not separate them specifically.

2.1. Republic of Croatia

Basic Information about Croatia				
Economic Indicators				
	2020.	2021.	2022.	2023.
Population (in millions)	4,048	3,879	3,856	3,853
GDP (in million EUR, current prices)	50.973	58.850	68.373	76.472
GDP per capita (in EUR)	12.593	15.171	17.732	19.847
GDP - real annual growth rate (in %)	-8,5	13,0	7,0	3,1
Average annual inflation rate - Harmonized index of consumer prices (HICP)	0,0	2,7	10,7	8,4
Average annual inflation rate - Consumer price index (CPI)	0,1	2,6	10,8	8,0
Current account balance (in million EUR)	-487	572	-1.895	825
Current account balance (as % of GDP)	-1,0	1,0	-2,8	1,1
Current and capital account balance (in million EUR)	581	1.967	-226	3.006
Current and capital account balance (as % of GDP)	1,1	3,4	-0,3	3,9
Exports of goods and services (as % of GDP)	41,4	49,9	59,2	54,3
Imports of goods and services (as % of GDP)	48,5	52,6	65,4	56,3
Gross external debt (in million EUR, at the end of the period)	41.293	47.260	49.826	63.998
Gross external debt (as % of GDP)	81,7	80,9	73,3	83,7
Net external debt (in million EUR, at the end of the period)	7.317,5	2.945,2	813,1	-2.601,8
Net external debt (as % of GDP)	14,5	5,0	1,2	-3,4
Exchange rate as of December 31 (USD : 1 EUR)	1,2271	1,1326	1,0666	1,105
Average exchange rate (USD : 1 EUR)	1,1422	1,1827	1,0530	1,081
Net lending (+)/Borrowing (-) of consolidated general government (in million EUR)	-3.687	-1.486	88	-528
Net lending (+)/borrowing (-) of Consolidated general government (as % of GDP)	-7,2	-2,5	0,1	-0,70
General government debt (as % of GDP)	86,1	77,5	67,8	63,0
Long-term interest rates (in % per annum)	0,83	0,45	2,70	3,80
Unemployment rate (according to ILO definition, population aged 15+)	7,5	7,6	7,00	6,1
Employment rate (according to ILO definition, population aged 15+)	47,2	47,8	48,7	49,1

*Table 1: Macroeconomic indicators in the Republic of Croatia
 (Source: Website of the Croatian national bank)*

2.2. Direct investments by country - liabilities (in million EUR)

Country	2020.	2021.	2022.	2023.	TOTAL
NETHERLANDS	-44,0	2,6	70,5	545,2	6.976,8
AUSTRIA	175,9	464,3	535,9	671,4	6.298,6
GERMANY	148,3	603,0	176,5	542,2	4.871,2
LUXEMBOURG	728,6	407,5	185,2	116,4	4.569,4
ITALY	109,0	285,6	373,0	-1,3	4.059,8
HUNGARY	-45,9	221,9	267,1	33,9	3.210,4
SLOVENIA	31,2	450,1	220,2	163,0	2.370,3
UNITED KINGDOM	-30,7	268,9	122,3	63,9	1.459,3
MALTA	31,9	-0,3	800,0	77,4	1.310,4
FRANCE	11,2	22,0	134,4	-139,2	1.004,1
CZECH REPUBLIC	55,3	102,5	173,5	84,7	949,7
NETHERLANDS ANTILLES	0,0	0,3	0,0	0,0	854,7
SWITZERLAND	-36,1	38,5	194,9	94,2	832,2
BELGIUM	19,2	18,8	34,8	9,1	794,2
SWEDEN	-301,3	45,3	90,7	50,4	666,7
BOSNIA AND HERZEGOVINA	48,8	61,6	61,1	84,3	648,4
USA	127,1	61,2	329,7	25,5	601,9
SLOVAKIA	19,3	142,7	59,1	92,8	468,4
POLAND	31,9	114,3	55,6	38,8	378,2
DENMARK	12,0	21,2	14,3	28,9	349,3
RUSSIA	22,4	9,4	-176,1	-3,2	308,9
IRELAND	-51,2	-3,1	27,8	28,0	236,3
CHINA	26,4	38,9	45,5	30,7	
NORWAY	-12,2	-1,0	-7,0	5,2	225,0
SPAIN	1,3	55,3	19,9	52,0	213,1
UNITED ARAB EMIRATES	0,1	145,2	5,0	-1,8	171,6
TURKEY	10,2	-38,9	-47,9	5,7	149,3
HONG KONG	1,3	112,5	-4,3	1,0	128,7
SOUTH KOREA	1,8	-0,4	-0,2	0,0	65,9
CANADA	3,2	-1,0	9,4	-1,7	12,4
BRITISH VIRGIN ISLANDS	-5,1	-37,2	3,2	0,2	11,9
SERBIA	3,4	-4,7	2,1	-2,3	9,2
MARSHALL ISLANDS	0,0	0,0	28,4	-19,5	8,0
CAYMAN ISLANDS	1,5	-36,6	11,1	5,9	6,6
AUSTRALIA	-8,8	13,3	0,4	-11,0	3,0
International financial institutions	-8,2	0,0	0,0	0,0	-38,2
LIECHTENSTEIN	-3,0	3,2	-6,9	2,3	-163,4
CYPRUS	17,9	44,1	-332,4	-33,9	-290,7
Other countries	1,8	33,4	90,5	42,7	592,4
Unknown	14,6	287,2	-158,5	32,6	667,4
TOTAL	1.109,0	3.951,8	3.408,6	2.714,4	45.224,5
<i>Of which: Circular direct investments</i>					2.359,4

*Table 2: Direct investments by country
 (Source: Website of the Croatian national bank)*

3. CRIMINAL LAW PROTECTION OF INVESTORS

Among the motivations of multinational companies when deciding on FDI, the location, i.e., the characteristics of the host country, plays a significant role. Important factors include the country's economic and market strength, the development of its natural and human resources,

infrastructure development, political and economic stability, the proper functioning of the legislative and judicial systems, and finally, government economic policy measures that regulate investment and economic relations with foreign countries (Babić et al., 2001). FDI is crucial for economic growth, technology transfer, and job creation. Criminal law protection of investors ensures that investors are protected from illegal activities that may threaten their investments. FDI concepts include various forms of investment, such as "greenfield" investments, where new infrastructure is built, and "brownfield" investments, which involve acquiring or leasing existing facilities. Existing studies show a significant correlation between the level of criminal law protection and the attraction of FDI. Research also indicates the importance of an effective judicial system and transparency in strengthening investor confidence. The literature review will cover works that analyze the effects of legal systems, regulatory frameworks, and institutional support on FDI. In the Republic of Croatia, criminal law protection of investors is ensured through a series of laws and regulations, including the Criminal code, the Companies act, and the Capital market act. European directives also play an important role in harmonizing investor protection in member states. The analysis of the legal framework will include key provisions that protect investors and ensure legal security. Institutional mechanisms include the work of courts, regulatory agencies such as the Croatian financial services supervisory agency (HANFA), and other bodies responsible for implementing criminal law measures and protecting investors. The efficiency of these institutions is vital to ensuring that laws are applied consistently and effectively. The role of institutions in preventing and sanctioning criminal offenses is crucial for maintaining investor confidence. Effective criminal law protection increases investor confidence, reduces the risk of capital loss due to illegal activities, and encourages long-term investments. Examples of countries with strong criminal law protection show higher FDI rates. Investors are more inclined to invest in countries where legal protection is clear and effective, contributing to economic stability and growth. Inadequate protection can lead to the withdrawal of investments, a reduction in new investments, and a poor reputation of the country as an FDI destination. Examples of countries with high levels of corruption and inefficient judicial systems show negative effects on FDI. Investors avoid countries where there is a high risk of investment loss due to fraud, corruption, or other illegal activities.

3.1. European Directives Regulating Foreign Direct Investments (FDI)

European directives that regulate foreign direct investments (FDI) and the criminal law protection of investors are aimed at creating a safe and transparent business environment within the European Union. Here are some key directives:

3.1.1. Anti-Money laundering directive (AMLD)

Directive (EU) 2015/849 on the prevention of the use of the financial system for money laundering or terrorist financing (the Fourth Anti-Money laundering directive, 4AMLD), Directive (EU) 2018/843 amending Directive (EU) 2015/849 (the Fifth Anti-Money laundering directive, 5AMLD), and Directive (EU) 2018/1673 on combating money laundering by criminal law. These directives require member states to implement measures to prevent money laundering and terrorist financing, including obligating legal and natural persons to report suspicious transactions. This helps create a safer environment for FDI.

3.1.2. Markets in financial instruments Directive (MiFID II)

Directive 2014/65/EU on markets in financial instruments (MiFID II) sets standards for investor protection, market transparency, and the integrity of financial markets. The directive aims to ensure a high level of investor protection and to ensure that financial markets operate in an efficient, resilient, and integrated manner.

3.1.3. Consumer protection Directive

Directive 2005/29/EC concerning unfair business-to-consumer commercial practices in the internal market regulates business practices between enterprises and consumers, ensuring that business activities are fair and transparent, which also impacts the overall business environment and FDI.

3.1.4. Corporate governance Directive

Directive 2007/36/EC on the exercise of certain rights of shareholders in listed companies and Directive (EU) 2017/828 amending Directive 2007/36/EC as regards the encouragement of long-term shareholder engagement.

These directives are aimed at improving corporate governance and ensuring shareholders' rights, including increasing transparency and accountability of company boards. Better corporate governance can enhance investor confidence and attract more FDI.

3.1.5. Restructuring and insolvency Directive

Directive (EU) 2019/1023 on preventive restructuring frameworks, second chance, and measures to increase the efficiency of restructuring, insolvency, and discharge procedures. This directive ensures that companies in financial distress have access to restructuring tools to avoid insolvency. Efficient restructuring and insolvency procedures are crucial for ensuring investor security.

3.1.6. Transparency Directive

Directive 2004/109/EC on the harmonization of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market. This directive requires companies whose securities are listed on regulated markets to regularly disclose financial information, thereby increasing transparency and investor confidence.

3.1.7. Conflict of interest Directive

Directive 2013/34/EU on the annual financial statements, consolidated financial statements, and related reports of certain types of undertakings (Accounting Directive) requires the disclosure of information about conflicts of interest, which helps protect investors' interests and ensures business transparency.

3.1.8. Competition Directive

Directive 2014/104/EU on certain rules governing actions for damages under national law for infringements of the competition law provisions of the member states and of the European Union allows investors to seek compensation for breaches of competition law, thereby increasing legal certainty and investor protection.

These directives together form a comprehensive legal framework that protects investors and promotes foreign direct investments within the European Union. Each directive plays a specific role in ensuring safety, transparency, and legal certainty for investors, thereby creating a favorable business environment for FDI.

3.2. Criminal Law Protection of Investors

In the Republic of Croatia, there are several criminal law institutes that protect investors from various illegal activities. These institutes are designed to ensure legal security and trust in the business environment.

3.2.1. Criminal Code of the Republic of Croatia

The Criminal Code is the main law prescribing criminal offenses and penalties in the Republic of Croatia, encompassing a range of provisions relevant to investor protection: Economic crimes: Fraud (Article 236) – Relates to deceit aimed at obtaining unlawful financial gain; Embezzlement (Article 233) – Relates to the illegal appropriation of entrusted property; Abuse of trust in economic transactions (Article 246) – A criminal offense related to harm caused to a business entity through abuse of trust. Crimes against property: Embezzlement (Article 233) – As mentioned, relates to the appropriation of entrusted assets or property; Concealment (Article 238) – Hiding or illegally appropriating assets or funds. Crimes against document authenticity: Forgery of documents (Article 278) – Creating false documents or altering genuine documents with the intent to deceive; Forgery of official or business documents (Article 279) – Involves altering or creating false official or business documents.

3.2.2. Companies act

The Companies act prescribes rules on the establishment, management, and operation of companies, and also contains provisions that protect investors: Protection of shareholders and members of the company (Rights of shareholders – Shareholders have the right to information, participation in decision-making, and protection from unlawful decisions of the management; Protection of minority shareholders – Minority shareholders have the right to seek judicial protection if their rights are violated; Liability of board members and Supervisory board members; Liability for damages – Board members and supervisory board members are liable for damages caused to the company by their illegal actions or omissions as per Article 252).

3.2.3. Capital market act

The Capital market act regulates the capital market in the Republic of Croatia and contains a range of provisions that protect investors: Investor protection - Insider trading (Article 465) – Prohibits trading securities based on privileged information; Market manipulation (Article 468) – Prohibits actions aimed at or resulting in market deception; Transparency and information disclosure - The obligation to disclose information applies to issuers of securities who are required to regularly publish financial reports and other relevant information that may affect investor decisions.

3.2.4. Anti-Money laundering and terrorist financing act

The Anti-Money laundering and terrorist financing act introduces measures to prevent money laundering and terrorist financing, which is crucial for protecting the integrity of the financial system and investor confidence: Duty to report suspicious transactions - Financial institutions and other obligated entities must report suspicious transactions to the Anti-Money laundering office; Customer Due diligence - Know your customer (KYC) – Financial institutions are required to conduct due diligence on their clients to prevent the misuse of the financial system.

3.2.5. Competition act

The Competition act protects free market competition and prevents the abuse of market power, which is important for creating a fair business environment for all investors: Prevention of market power abuse - Abuse of a dominant position, i.e., the prohibition of the abuse of market power by companies holding a dominant market position; Ban on cartels and price agreements - Prohibition of cartel agreements and price-fixing that distort free market competition. These criminal law institutes collectively ensure comprehensive protection for investors, creating a legally secure and more transparent business environment in the Republic of Croatia.

4. THE ROLE OF CRIMINAL LAW MEASURES IN ATTRACTING FOREIGN DIRECT INVESTMENTS

An analysis of countries like Singapore and Germany shows how they have successfully implemented criminal law measures to protect investors, thereby attracting significant foreign direct investments (FDI). These countries are characterized by a high level of legal security, transparency, and judicial system efficiency, which creates a favorable investment environment. Singapore, with one of the most reliable judicial systems in the world, continuously improves its laws and regulations to ensure investor protection. Similarly, Germany, known for its robust legal infrastructure and strict law enforcement, attracts investors seeking stability and predictability in business operations. These measures are crucial for ensuring investor confidence and maintaining competitiveness in the global market. In contrast, countries suffering from political instability, lack of transparency, weak law enforcement, inadequate criminal law protection, high levels of corruption, and legal uncertainty struggle to attract foreign direct investments (FDI). Corruption has a crucial effect on investments as it increases risk and uncertainty for potential investors, thus discouraging investments in politically risky economies (Khan and Akbar, 2013). According to the Corruption Perceptions Index by Transparency International in Berlin, the most transparent countries in 2023 are Denmark with a score of 90, Finland with 87, and New Zealand with 85 points. The most corrupt countries are Syria, Venezuela, and Somalia. Croatia is at the bottom of the European Union, with worse scores than Greece with 49, Romania with 46, Bulgaria with 45, and Hungary with 42 points. The average score of EU member states is 64, so Croatia lags behind by 14 points, creating an unfavorable environment for potential foreign investments. Compared to neighboring countries, Slovenia, Serbia, and Kosovo have the same results as in the previous year, while Bosnia and Herzegovina and Montenegro have increased by one point. Slovenia has 56 points, Croatia 50, Montenegro 46, Kosovo 41, Serbia 36, and Bosnia and Herzegovina 35 points. Croatia recorded the same score as the previous year and has the same number of points on the global map as Malaysia. To improve the criminal law protection of investors, it is recommended to strengthen the legal framework through the introduction of stricter laws and regulations that clearly define criminal measures for fraud, corruption, and other forms of investor abuse, ensuring better legal protection and deterrence from criminal activities. Enhancing the transparency of the judicial system and business environment through the mandatory public disclosure of all relevant information about company operations and law enforcement would also increase investor confidence. Ensuring regular education and training for judicial personnel and regulators on the latest trends and practices in investor protection would contribute to their better preparedness for effective law enforcement. Implementing measures to accelerate court proceedings related to investment disputes, including the use of specialized courts or arbitration panels, would enable quick and efficient justice. Finally, promoting international cooperation and aligning national laws with international standards for investor protection would facilitate information exchange and coordination in combating cross-border fraud and abuse. Recommendations for institutional reforms include proposals to strengthen institutions responsible for enforcing criminal law measures, including improving the capacities of courts and regulatory agencies and increasing transparency and accountability. Institutional reforms should encompass the education and training of judicial personnel to better equip them to face challenges in law enforcement. A key component is strengthening cooperation between different agencies, which will enable more effective coordination and information exchange. Additionally, improving oversight and control mechanisms will ensure that institutions act in accordance with the highest standards of integrity and efficiency. Overall, these reforms aim to create a strong and reliable institutional framework capable of effectively implementing criminal law measures and protecting investor interests.

5. CONCLUSION

Effective criminal law protection is crucial for creating a secure and attractive business environment that encourages FDI. In Croatia, a comprehensive legal framework, including the Criminal Code, Companies Act, Capital market Act, Anti-Money laundering and terrorist financing Act, and the Competition Act, provides this protection. These laws, aligned with European directives, set high standards for investor protection, the prevention of illegal activities, and the assurance of fair market conditions. The Croatian legal framework encompasses various criminal offenses such as fraud, embezzlement, and abuse of trust in economic transactions, providing fundamental protection for investors. Additionally, capital market regulation and measures against money laundering and terrorist financing further enhance the security and transparency of the investment environment. Compliance with European directives, such as those on money laundering prevention and financial market integrity, strengthens overall legal security and investor confidence in Croatia. Recommendations for improving criminal law protection of investors in Croatia include strengthening the legal framework through the introduction of stricter laws and regulations, improving the transparency of the judicial system, and ensuring effective law enforcement. Regular education and training for judicial personnel and regulators on the latest trends and practices in investor protection are also crucial. Additionally, speeding up court proceedings related to investment disputes through specialized courts or arbitration panels can ensure swift and efficient justice. Finally, promoting international cooperation and aligning national laws with international standards will facilitate information exchange and coordination in combating cross-border fraud and abuse. These measures, combined with institutional reforms to strengthen the capacities of courts and regulatory agencies and to increase transparency and accountability, aim to create a robust and reliable institutional framework. Such improvements are essential for the effective implementation of criminal law measures and the protection of investor interests, making Croatia a more attractive destination for foreign direct investments.

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ANALYSIS OF THE IMPACT OF INFORMATION TECHNOLOGY FACTORS ON THE SUPPLY CHAIN EFFECTIVENESS OF THE WORLD'S LEADING OUTDOOR EQUIPMENT MANUFACTURER

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ABSTRACT

The paper examines the impact of information technology factors (cloud computing, hardware, software and social media) on supply chain performance and customer satisfaction in the supply chain of the world's leading manufacturer of outdoor machinery. Husqvarna AB is the world's leading manufacturer of outdoor machinery and forms a complex supply chain with its partners that includes participants from different continents. Since the management of such a supply chain is extremely complex and multidimensional, the research conducted is useful to gain insight into the current trends in the application of information technology factors and their impact on the effectiveness of the global supply chain. In the Republic of Croatia, a network of sales representatives and service centers has been established, which represent the end points of Husqvarna AB's internal supply chain. The aim of the research is to determine the individual contribution of each factor of information technology and the contribution of supply chain performance to end user satisfaction. After the research, it was found that the hardware and cloud computing factors contribute the most to supply chain performance, while the contribution of software is low. It was also found that the social media factor does not contribute to supply chain performance at all. In the final stage, supply chain performance was found to contribute to customer satisfaction. Based on these findings, this study provides a discussion on the current and future use of information technology in global supply chains.

Keywords: *supply chain, supply chain management, information technology, effectiveness*

1. INTRODUCTION

In the last two decades, the use of information technology has intensified in companies of different sizes. Most research relates to the application of information technology in small and medium-sized enterprises, while a smaller body of research focuses on its application in large, complex enterprise systems that have established supply chains on a global scale. The global supply chain encompasses the value creation of products and services at locations in different countries (geographic component) and involves the integration of a large number of participants within the supply chain such as primary and secondary suppliers, manufacturers, agents and retailers into a single value creation system for all participants (functional component). Due to its fragmentation, the management of the global supply chain today is complex, as a large amount of information is generated at all stages of the value chain, which requires an efficient system for collecting, storing and managing information. It was found that software, hardware, cloud computing and social media are the most commonly used IT factors that affect user satisfaction in global supply chains.

The information gathered feeds into the planning process and is crucial for business decision making, which is why special attention is paid to the design of the information flow in the supply chain. Nowadays, the flow of information is almost entirely realized through information technology, which, by combining its factors, enables efficient and effective management of the chain. A network of sales representatives and service centers represent the end points of Husqvarna AB's internal supply chain in the Republic of Croatia. The aim of the research is to determine the individual contribution of each factor of information technology to supply chain performance and end-user satisfaction.

2. LITERATURE REVIEW

The role of information technology has changed considerably over time, so that it is not mentioned at all in the definition of the supply chain by Heskett et al. (1964). The CLM (1998) definition states that the processes within the supply chain are responsible for planning and controlling the efficient and effective flow of goods, services and information from the point of origin to the point of consumption in order to meet the needs of customers. According to the generally accepted definition of CLM, information is essential to supply chain management and has become even more important, and companies are increasingly faced with problems related to missing or delayed information. In response to the emerging problem, companies have started to continuously invest in information technology that enables a continuous exchange of information. Benefits from the application of information technology can be found in almost all global supply chains, e.g. Rao (2007) describes the benefits in agriculture, Zografos et al. (2012) in transportation, Meacham et al. (2013) in the green economy, while Suh et al. (2012) analyze the benefits in trade. Motwani et al. (2000) identified in their research a number of companies that have successfully used information technology in their global supply chains, e.g. Allied-Corp, CAPS Logistics, CyberSystem Technologies, LogicTools, etc. As each activity has certain specificities, such as seasonality, speed of delivery, product quality and serving different user requirements, special solutions had to be designed and programmed, which led to a strong development of information technology. The development took place in several phases: In the first phase, hardware was developed that enabled the virtual connection of companies, then software solutions were developed, while more recently, working in the cloud and interactive applications (social networks) have developed most rapidly. The ultimate goal of implementing information technology is to achieve a continuous flow between all members of the supply chain (Himanshu, 2020). Information technology factors should enable the interorganizational connection of all participants in the global supply chain, including consumers, suppliers, and intermediaries, to achieve the goals of maximizing customer satisfaction, improving forecasting, reducing inventory levels, and reducing transportation costs. Given the dynamic nature of business in the global environment and the need to ensure the efficiency of daily operations, the continuity of information flow is a daily challenge. Managing global supply chains is associated with high risks, so investing in information technology is one way to protect against changes in the external environment (Closs, 2011). For this reason, there is growing interest among researchers, academics and managers in exploring the impact of information technology on the operation of global supply chains (Koksal, et al. 2017). Research on the impact of information technology on global supply chains has mainly focused on the benefits achieved through its application, such as increased information transparency or increased production flexibility (Mabert and Venkataramanan, 1998), shortened delivery times, reduced operating costs, etc. Previous research has primarily focused on the B2B aspect of the supply chain, while B2C research has included other types of indicators such as measuring customer satisfaction, speed of response to customer inquiries, complaint resolution or information sharing with customers.

When analyzing the impact of information technology on global supply chains, it should be noted that most research focuses on only one factor - the software and the benefits achieved through its use. Based on the secondary research conducted, information technology is found to have different forms (factors) including software, hardware, cloud computing and social media. Although there are other factors for the purpose of this research, an analysis of the impact of information technology factors (software, hardware, cloud computing and communication tools) on supply chain performance and ultimately end-user satisfaction was conducted. Since the global supply chain is a complex system involving B2B and B2C relationships, it is necessary to examine the extent to which information technology factors contribute to supply chain performance and ultimately customer satisfaction.

2.1. Software

Software support in the supply chain can be used by working in the cloud or via a computer network. Working in a network implies direct access to the information of the networked companies through software installed at each member of the supply chain and allows the continuous development of the information flow in the supply chain. It can be said that a network consists of interconnected computers of supply chain members working on a common problem by dividing it into several small units called networks. From the perspective of supply chain management, software is defined as an integrated information system that is part of any business system whose function is the continuous provision of necessary and timely information to all levels of management. Software in the information flow of the supply chain management concept stands for modern software solutions that enable the virtual connection of several companies and thus a more precise control of common processes. The information system has the task of collecting, storing, processing and delivering the necessary information to all members (suppliers, intermediaries, customers) of the supply chain. The aim of implementing an information system is to provide the right information at the right time, in the right place and at the lowest possible cost. The most commonly used software solutions include ERP, barcoding, decision support systems, EDI, e-procurement, inventory management, material requirements planning, RFID, area network (WAN), metropolitan area network (MAN), warehouse management systems (Kumar, 2016). Numerous case studies have been published documenting the increasing use of supply chain management software in a variety of industries, including agribusiness (Harrison and Wills, 1983), retail (Harrington, 1998), pharmaceuticals (Levis and Lazaros, 2004), paper (Philpott and Everett, 2001) and numerous others. Large, multinational companies such as Procter & Gamble (Anthes, 2005), Hewlett-Packard (Billington et al., 2004) and Volkswagen (Karabakal et al., 2000) have benefited from commercial supply chain modeling technology to improve their operational efficiency.

2.2. Hardware

Hardware are the physical parts of the computer system that enable the exchange of information between companies within the supply chain. IT equipment includes computing devices (desktop computers, tablets, laptops and handheld computers), computer peripherals (printers, photocopiers, scanners), network equipment and infrastructure, telephony (telephones, fax machines, home switches, routers, internet connections and VPN) and the internet. IT equipment is necessary to ensure the automatic execution of business processes between companies and to increase the overall service level for all entities involved in the execution. By investing in equipment, each company within the supply chain no longer needs to have a complete infrastructure, including servers, maintenance and everything else that makes up such a system, but the equipment can be distributed more rationally in centralized units that provide the necessary infrastructure for all members of the supply chain.

By placing a piece of equipment with one manufacturer or dominant entity within the supply chain, the burden is taken off other members of the supply chain and cost savings are realized that can be used for other projects. In addition, centralized placement of equipment allows for better control and upgrade of the system, as information technology has a short life cycle. However, as information technology equipment now covers almost all areas of the business, all members of the supply chain must have the necessary equipment to carry out daily activities within the chain.

2.3. Cloud computing and cloud services

Software support within the supply chain can also be accessed via cloud computing. In contrast to working in a network, companies access the software indirectly via the internet. Working in the cloud is therefore defined as "an information technology service model in which computer services (both hardware and software) are provided to customers on demand over a network in a self-service manner, regardless of device (e.g. smartphone, tablet, laptop) and location" (Marston, Li, Bandyopadhyay, Zhang, & Ghalsasi, 2011, p. 177). Cloud computing refers to shared software and information that can be accessed on demand via the internet (Armbrust et al., 2010). Nowadays, the use of cloud computing is widespread in the supply chain, and without cloud computing, the organization could not operate continuously on a daily basis. The main advantages of working in the cloud are quick access to a large amount of information needed in different business areas. Due to the large amount of information circulating in the business, the prerequisite for working in the cloud is a server that serves as a medium for users to access information instantly. The number of companies using cloud computing is increasing year by year (Bommadevera et al., 2018). The main reason for the increasing use is functionality and the need to provide customers with the information they want as quickly as possible to meet their needs. When working online, companies do not need to invest additional funds in network infrastructure or pay separately for software licenses, as these are usually provided by the financially dominant company within the supply chain. As a result, software updates, software upgrades and internet protection are taken care of by the cloud computing investors, which ultimately means financial savings for other members of the supply chain and makes cloud computing a widely accepted business model.

2.4. Social Media

Social media are interactive applications through which various information and business documents are exchanged within the supply chain. The aim of investing in social networks is to achieve the most efficient way of sharing information and data between companies within the supply chain (B2B) and their users (B2C), taking into account all assumptions about security, transparency and cost-effectiveness. Nowadays, different media are used (Youtube, Facebook, Twitter, LinkedIn, Myspace, Instagram...) to collect information in both directions of the supply chain, both towards suppliers and towards customers. Companies within the supply chain use social media to collect different types of data from their customers and potential customers. The networks are primarily used to analyze customer behavior based on the collected data and to innovate products and services. There are several ways for companies to improve their social media presence and thereby enhance their customers' experience (Kietzmann et al. 2011). Empowered customers tend to have an extremely low tolerance for poor service and quality and readily report their problems online (Cui et al. 2018). Social media has created additional service channels for customers, allowing companies to provide a more personal touch than traditional methods of complaint submission, such as by phone or email (Pearson 2015). If companies do not use social media, they can quickly lose their competitive advantage and be excluded from the world of their customers, suppliers, partners and competitors (Cui, Gallino, Moreno & Zhang, 2018).

2.5. Supply chain performance

Supply chain performance is a set of indicators used to determine the effectiveness of an existing system or to compare one system to another (Beamon, 1999). Throughout history, researchers have defined supply chain performance in different ways, but they have mainly focused on economic indicators (sales, profit), ignoring customer satisfaction indicators (Harland, 1996). Table 1 provides an overview of traditional supply chain performance indicators.

Autor	Indicator
Hodder and Dincer (1986)	Maximize mean-variance of after-tax profit
Breitman and Lucas (1987)	Market penetration, facility utilization, sales, costs, losses
Haug (1992)	Minimize material / labor / transportation / utility costs
Gutierrez and Kouvelis (1995)	Minimize fixed and variable costs
Kouvelis and Gutierrez (1997)	Minimize shortage/overage costs
Dasu and de la Torre (1997)	Maximize operating profit
Munson and Rosenblatt (1997)	Minimize sum of production and purchase cost
Lowe et al (2002)	Minimize production and transportation costs

Table 1: Traditional indicators of supply chain performance

Source: Meixell, M. J. and Gargeya, V. B. (2005). Global supply chain design: A literature review and critique. Transportation Research Part E: Logistics and Transportation Review, 41(6): 531-550.

In today's world, it is necessary to define a new indicator that is more focused on meeting customer needs. Therefore, the success of applying the concept of supply chain management is measured by the performance of the supply chain, which includes flexibility and adaptability. Supply chain efficiency is defined as the ability of a company to adapt to changes in the external environment in a short period of time. In the context of the supply chain, it refers to the ability to quickly and efficiently adapt internal processes between companies in the supply chain to external changes that have occurred due to market changes, e.g. the emergence of new competitors or changes in production technology. In addition, efficiency describes the ability of the supply chain to adapt to the market without incurring a significant use of resources, i.e. costs, time and downtime in the development of production processes or a loss of organizational performance. Supply chain effectiveness looks at the supply chain from an integrative, consumer-oriented perspective and can be defined as the ability of the chain to meet changing consumer needs. The effectiveness of the system should be focused on satisfying consumer needs (activities that add value to the products or services), which is achieved by integrating internal (production) and external (marketing) functions in the supply chain. It can be concluded that the adaptability of the supply chain enables the members of the chain to quickly adapt to customer customers' requirements in order to achieve their satisfaction.

2.6. Customer satisfaction

According to Eckert (2007), satisfaction refers to the quality of products, services, value for money and the fact that a company meets or exceeds the customer's requirements. Customer satisfaction is the ultimate indicator of supply chain success and is reflected in various customer satisfaction parameters such as satisfaction with product quality, product performance, product longevity, service quality, customer care or speed of delivery. Customer satisfaction is a complex and multidimensional concept that includes indicators that are not exclusively related to products or services, so that customer satisfaction is also influenced by the availability of goods, speed of response, access to information, training of sales staff, after-sales service, etc.

Today's trends point to a restructuring of supply chains, precisely because customer preferences change frequently, putting great pressure on companies in the supply chain to find new ways to satisfy customers.

3. RESEARCH MODEL AND HYPOTHESES

The model is defined by hypotheses that test the relationship between the variables. The dependent and independent variables were defined on this basis. The independent variables of the model are the factors of information technology, hardware, software, social networks and cloud computing, while the dependent variables are supply chain performance and customer satisfaction. By analyzing previous research and considering the characteristics of supply chain management in dentistry, the following hypotheses are formulated and a conceptual research model is proposed.

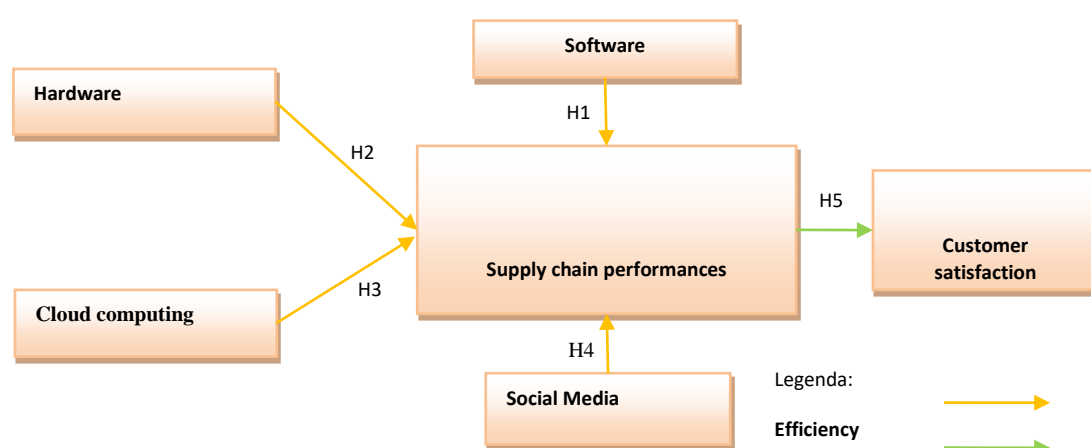


Figure 1: Proposed research model
 Source: Author

The hypotheses of the model (H1, H2, H3 and H4) indicate the relationships between the factors, which can be positive or negative, and the model determines the statistical contributions of each factor of supply chain management to supply chain performance (efficiency) and the contribution of supply chain performance to consumer satisfaction (effectiveness), thus confirming or refuting the basic scientific hypothesis of the work, which aims to determine the existence of a positive correlation between the factors of supply chain management and consumer satisfaction. In the theoretical model established, hypotheses 1, 2, 3 and 4 measure the efficiency of the supply chain, while hypothesis 5 measures the effectiveness of the supply chain.

3.1. Software and supply chain performances

The positive impact of software on supply chain performance in small and medium-sized enterprises has already been demonstrated (Martin, 1996, McGuffog, 1997). Consequently, it can be expected to contribute a positive contribution to global supply chain performance. The success of the supply chain is also reflected in the speed of information exchange between members, and one of the most important prerequisites for this is the stability of program support. Accordingly, the first research hypothesis of the model is:

- H1: Software has a strong and positive influence on supply chain performance.

3.2. Hardware and supply chain performances

A positive correlation between hardware and supply chain performance in SMEs has already been established (Ravi et al. 2005). Hypothesis 2 aims to determine whether hardware makes a strong and positive contribution to global supply chain performance. The hypothesis is that hardware contributes strongly and positively to the process linkage of firms in the global supply chain, as members of the alliance cannot exchange information and data with each other without installed IT equipment. Storage and access to data are also essential for the functioning of the company, hence hypothesis 2 of the model:

- H2: Hardware has a strong and positive impact on supply chain performance.

3.3. Cloud computing and supply chain performances

Cloud computing contributes positively to the performance of SMEs (Bruque Cámara et. al 2015). Since a large number of subjects can work within the supply chain, some of which are small and medium-sized enterprises, and the fact that modern companies need quick access to information, it is assumed that it will also have a positive impact on companies operating in the global supply chain. The main benefit of working in the cloud is fast access to information without members having to invest heavily in a local infrastructure. The software is managed centrally and is located on multiple servers in the cloud. All users within the supply chain can access the software without having to worry about storing their own data. The result of all these considerations is hypothesis 3:

- H3: Cloud computing has a strong and positive impact on the performance of the global supply chain.

3.4. Social media and supply chain performances

Social media represents a great opportunity for improving the performance of various business functions in organisations. Culnan, McHugh, & Zubillaga (2010) highlight three factors that are responsible for organisations benefiting from the use of social media: attentive adoption, community building, and receptivity. Analysing these three factors can help firms develop appropriate social media strategies. Similarly, understanding the relationship between the use of social media and its impact on various supply chain functions is very important for developing appropriate supply chain systems and strategies. Although the existing literature contains some sporadic evidence of the successful application of social media in the supply chain context, there is a lack of in-depth analysis of how social media actually affects the process of supply chain management and its outcomes. It is expected that the use of modern communication platforms will contribute a positive contribution to supply chain performance in the supply chain of Husqvarna AB in Croatia.

- H4: Social media has a strong and positive impact on global supply chain performance.

3.5. Supply chain performances and customer satisfaction

A strong and positive influence of supply chain performance on customer satisfaction has already been proven (Naqvi et. al, 2000). This hypothesis seeks to determine whether supply chain performance contributes to customer satisfaction in the global supply chain of the Husqvarna AB corporation. In order to confirm the hypothesis, the performance of the supply chain should contribute statistically significantly to customer satisfaction ($p < 0.05$).

- H5: supply chain performance strongly and positively influences consumer satisfaction

4. RESEARCH METHODOLOGY

4.1. Data collection

The global supply chain of Husqvarna AB from Sweden has been part of the Electrolux Group since 1977, which employs 77,000 people and achieved a turnover of 124,000 million in 2004.

Husqvarna AB is part of the outdoor products division, in which it is the largest company when all brands are added together. Husqvarna is the world's leading manufacturer of chainsaws for the professional market, with the German company Stihl as its main competitor in a market that is basically a duopoly (Fredriksson and Carlsson, 2005). There are 18,000 retailers worldwide and Husqvarna is represented in over one hundred countries (Carlsson, Fredriksson, 2005). For this study, Husqvarna's supply chain in Croatia was analyzed. In 2022, there were 108 retail stores in the market of the Republic of Croatia, which also represent the sample for this research. The total income of all companies within the supply chain amounted to 171,494,373.33 euros, while 1,325 employees were employed in the companies (Poslovna Hrvatska, 2022). The address list of the surveyed companies in the Husqvarna supply chain was obtained from the state agency (Croatian Chamber of Commerce) and via the Fina portal for data disclosure (<http://rgfi.fina.hr/JavnaObjava-web/prijava.do>). After determining the sample, the questionnaire, which contains 45 questions, was designed by two experts in the field of supply chain management. The rules and recommendations for questionnaire design were taken into account when compiling the items (see Nunnally JC, 1994). The questionnaire, together with a description of the research objectives, was sent to the companies' e-mail addresses via the online networking service limesurvey.srce.hr/. The questionnaire used in this paper is a measurement tool to identify IT technology factors in the Husqvarna supply chain in Croatia. The respondents' answers were rated on a Likert scale from 1 to 5. The ratings correspond to the following categories: "1" strongly disagree, "2" somewhat disagree, "3" neither agree nor strongly agree, "4" somewhat agree and "5" strongly agree, with the scores being equal.

4.2. Research results

In the data processing phase of the questionnaire, the psychometric characteristics of the questionnaire were first determined: Validity and reliability. An exploratory (research) factor analysis of the principal components (Principal analysis Component) with oblimin or oblique rotation was carried out (it was used due to the assumption of correlated factors). Validity was determined indirectly by determining the number of factors, and the number of factors was determined by analyzing the Cattell-Scree curve, applying the Guttman-Kaiser criterion to reduce the principal factors (only particles with eigenvalues greater than 1 were considered), analyzing the factor loadings, and analyzing the intercorrelations between the factors. Particles with factor loadings < 0.4 and/or particles that had equal loadings on more than one factor were excluded from the questionnaire. To determine reliability, the internal consistency method was used, in which the value of the Croanbach reliability coefficient is determined. The criterion for the Croanbach's reliability coefficient was a value of $p < 0.5$. In the further course of the work, a factor analysis was carried out, which is a series of statistical-mathematical procedures suitable for analysing data on the reciprocal relationship between the observed phenomena. The results of the factor loadings show that information technology consists of four factors. Factor one (software) has five particles whose factor loadings are between 0.62 and 0.88, factor two (hardware) has six particles (the factor loadings of the particles are between 0.85 and 0.88), factor three (social networks) belongs to four particles (the factor loadings of the particles are between 0.46 and 0.79), while factor four (cloud work) describes five particles (the factor loadings are between 0.52 and 0.80). The calculation of the factor loadings for supply chain performance shows that the factor is described by 8 particles with factor loadings between 0.58 and 0.86. User satisfaction is described by six items with factor loadings between 0.44 and 0.77. In the further course of the research process, a multiple regression analysis was carried out to determine the proportions and significance of the contribution of the studied factors hardware, software, social networks and cloud computing (independent variables) to supply chain performance and customer satisfaction (dependent variables).

The main purpose of conducting multiple regression analysis is to determine the intensity of the contribution of supply chain management factors to supply chain performance and the contribution of supply chain performance to customer satisfaction. The effects are determined by examining the correlation (r) and contribution of the factors (R^2), hardware, software, cloud computing and social media to supply chain performance and customer satisfaction. The results of the analysis aim to determine the ability of the factors to contribute to the performance of the supply chain, which shows the ability of the factors to contribute to the efficiency of the supply chain. Determining the relationship between supply chain performance and customer satisfaction also shows that the factors can contribute to the effectiveness of the business system.

Factor	β	SE_{β}	P	R	Contribution share %
Hardware	0,463	0,096	0,032*	0,835	21,3
Software	0,360	0,087	0,025*	0,783	13,0
Cloud computing	0,676	0,104	<0,001*	0,901	45,7
Social Media	0,014	0,120	0,641	0,371	2,1

β - regression coefficient

SE_{β} - standard error for β regression coefficient

r - correlation coefficient between the examined factor and supply chain performance

* - statistically significant P

Table 2: Contribution shares of the investigated factors

Source: Author

A statistically significant multiple regression coefficient of $R=0.907$ ($p<0.001$) or $R^2=0.823$ was obtained, which means that the total contribution of these studied factors to the performance of the supply chain is 82.3%, i.e. these studied factors contribute 82.3% to the performance of the supply chain. The contribution of the hardware factor to supply chain management performance is 21.3% and is statistically significant ($p=0.032$). For software, it is 13% ($p=0.025$), while cloud computing makes the largest contribution at 45.7% ($p<0.001$). When testing the hypotheses, it was found that all information technology factors contribute statistically significantly ($p<0.05$) to supply chain performance, with the exception of social media, whose contribution is 2.1% ($p=0.371$).

Factor	β	SE_{β}	P	r	Contribution share %
Supply chain performance	0,856	0,097	0,001*	0,858	73,4

β - regression coefficient

SE_{β} - standard error for β regression coefficient

r - correlation coefficient between supply chain performance and customer satisfaction

* - statistically significant P

Table 3: Contribution share of supply chain performance to customer satisfaction

Source: Author

A statistically significant multiple regression coefficient $R=0.856$ ($p<0.001$) or $R^2=0.734$ was obtained, which means that the overall contribution of supply chain performance to customer satisfaction is 73.4%, i.e. supply chain performance contributes 73.4% to customer satisfaction, which means that supply chain performance contributes to supply chain effectiveness.

5. CONCLUSION

The results of the study are important for the consideration of current and the design of future management strategies for global supply chains. Since no reference research on the influence of information technology factors on user satisfaction in the global supply chain has been conducted to date, the scientific findings are of great importance for all those involved in internal supply chains. The significance of the knowledge gained manifests itself above all in the (non-)application of information technology factors to supply chain performance, which is ultimately reflected in user satisfaction. The results of the study conducted show the following. Hypothesis 1 showed that the software factor ($p=0.025$; $r=0.783$) contributes significantly to supply chain performance, but also that its contribution is small compared to other factors (13%). The result of the hypothesis test is interpreted to mean that companies are aware of the benefits of using modern software solutions within the supply chain and that companies frequently update their software systems. As only a small proportion (13%) of supply chain performance was identified, it can be concluded that the influence of software compared to other information technology factors is lower today than it was twenty years ago. This is due to the fact that the rapid development of information technology has created new ways of linking business processes between companies within the supply chain, meaning that traditional solutions such as linking processes using the same software are no longer viable and are difficult to apply to all companies within the supply chain. Hypothesis 2 proved that hardware contributes strongly to supply chain performance ($p=0.032$; $r=0.835$). By confirming the hypothesis, it was proven that supply chain members have modern IT equipment that enables continuous business development and daily execution of operational tasks. The daily transfer of a large amount of information and data within the supply chain must be accompanied by an adequate infrastructure, which is why supply chain members are to a certain extent forced to continuously invest in modern computer equipment. Investment in hardware is one of the fastest growing costs in the modern economy. The speed of customer service is now one of the key factors in the success of supply chains, which is why companies are investing large sums in equipment that allows them to exchange information with customers more efficiently. Servers, tablets and smart panels are becoming information infrastructures through which the flow of information in the supply chain is realized. Hypothesis 3 proved that cloud computing strongly contributes to supply chain performance ($p=0.001$; $r=0.901$). By confirming hypothesis 3, it was found that cloud computing makes a strong and positive contribution to supply chain performance and that the proportion of this contribution is the largest. This result best explains the current business trends in the global supply chain. Today's business involves the rapid exchange of information and data between supply chain members, and this is primarily enabled by working in the cloud. The analysis of the selected sample concludes that the information system of Husqvarna supply chain in Croatia is fully realized through cloud computing, which means that all members of the supply chain have real-time access to a large amount of information about their business. The functionality of cloud computing grows with business needs, so for example, the introduction of new products to the market means that the existing version of the program must be updated, which does not contain information about new products or services (service and assembly) offered with the products. Hypothesis 4 showed that social media does not contribute to supply chain performance ($p=0.641$; $r=0.371$). The test of hypothesis 4 showed that social media does not contribute to supply chain performance. Hypothesis 4 is interpreted to mean that social media as a factor currently has no influence on the supply chain performance of outdoor machinery manufacturers, although its influence is increasing in other industries. The tests revealed that the companies within Husqvarna's supply chain in Croatia have not yet realized the benefits that can be achieved through a social media presence, but by analyzing other industries, a change can be expected in this segment in the future.

Hypothesis 5 proved that supply chain performance contributes strongly and positively to customer satisfaction ($p=0.001$; $r=0.858$). Customer satisfaction is the ultimate goal of any supply chain, so Husqvarna, as the world's largest manufacturer in its industry, is expected to meet the expectations of a large number of its customers. In 2021, Husqvarna's global supply chain comprised 21,000 retail stores, which speaks to its flexibility and adaptability, considering that each market has specific requirements for product functionality and pricing policies. When testing the fifth hypothesis, it was confirmed that customers in the Republic of Croatia are also satisfied with the performance of the supply chain, which means that the supply chain is effective.

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THE ROLE OF ARTIFICIAL INTELLIGENCE IN ACCOUNTING AND FINANCE

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ABSTRACT

Digital technologies and digital transformation are changing the financial industry. There is almost no industry that is not affected by new modern technologies, and all to improve business performance. Almost every industry, including companies today, uses new technology to create added value and achieve competitive advantage. This paper examines the application of artificial intelligence within accounting and finance and provides a clear overview of individual technologies (machine learning, deep learning, natural language processing, expert systems, cloud computing, and data mining) within the mentioned area. The aim of this paper was (1) to analyze and investigate the importance of artificial intelligence in finance (2) to analyze and investigate the importance of artificial intelligence in accounting (3) to investigate the appearances of artificial intelligence in green accounting and green finance. The paper clearly shows the benefits and advantages that processed technologies provide today in the field of accounting and finance, thereby significantly improving work productivity.

Keywords: *artificial intelligence, accounting, finance, green accounting and finance*

1. INTRODUCTION

Artificial intelligence (AI) is becoming a dominant technology in almost every industry, including finance. Its implementation and use are becoming more and more important. Companies recognize the many advantages that its application brings, and therefore precisely thanks to artificial intelligence, companies create added value and increase their competitiveness on the market. "AI is an effective and efficient tool for solving problems that take time and money to achieve faster growth and success" (Lakhchini, 2022:438). Likewise, artificial intelligence and its use are associated with reducing costs, increasing productivity, and improving the quality of services and products (Lakhchini, 2022). Artificial intelligence enables prediction, recognition, diagnosis, and so more (Park, 2020). This work aims to combine artificial intelligence with accounting and finance. The importance of accounting and finance as the lifeblood of the business system is of crucial importance for the quality management of the company and making business decisions. Artificial intelligence incorporated into accounting and finance can greatly improve and increase efficiency in conducting business operations. The paper shows the areas of artificial intelligence incorporated in accounting and finance and gives a clear overview of these technologies (machine learning, deep learning, natural language processing, expert systems, cloud computing, and data mining) as well as the possibilities and advantages that the technologies of artificial intelligence provide.

2. USAGE OF ARTIFICIAL INTELLIGENCE (AI) IN FINANCE

In this chapter, we will explore the usage of artificial intelligence in finance. Today, we testify to the increasing use of artificial intelligence within the financial system. Although innovations in finance are not new, the implementation and application of new technological developments in the financial industry are growing rapidly. Numerous businesses have applied AI to improve their operations (Bughin et al., 2018). "The financial field is transitioning to cloud-based technologies and AI-enabled services to provide the ideal solutions for consumers as a result of ongoing threats to persist competitively innovative" (Lakhchini, 2022:446).

2.1. Machine learning

Machine learning is a division of artificial intelligence interested in creating systems that can be adapted to gain information to make predictions regarding risk assessments. Machine learning can work with large amounts of data without causing any errors. Which makes using machine learning solutions highly trusted in the industry. Reliability is the most important factor in finance, using machine learning systems for fraud detection and prevention helps companies to keep their million-dollar worth of data safe. Machine learning systems can recognize patterns and questionable activities from the users and also detect users' IP addresses and locations. According to this information, machinery can drop the user from the ongoing procedure. Additionally, machine learning can create a portfolio according to the investor's target. While creating a portfolio systems can also assess investor's risk allowance and determine the next steps compatible with that. According to research done on 21st-century technology, focused on two hundred years back, machine learning algorithms can provide us with tools that can change the board of selection process to choose successful directors (Erel et al., 2021). The advantage is the fact that AI and machine learning (ML) offer accountants the necessary support to generate data-backed results that reduce processing time and errors" (Mihai and Dutescu, 2022:855).

2.2. Expert system

Expert systems are a division of machine learning produced to duplicate humans' decision judgments to conclude along with algorithms. This way system can make advised decisions and make suggestions in the required areas, such as finance, accounting, invoicing, and billing. The system analyzes the possibility of risks considering factors such as volatility, and liquidity and after that suggests varied portfolios. In this way, expert systems help companies make accurate forecasts for investments. The system uses forward chaining and backward chaining to make a decision. In the forward chaining, the system first uses available data and concludes. In the backward chaining, the system starts with the target and tries to find the factors that align with the target. These procedures allow the system to make highly reliable decisions. Keeping the data updated is important to make correct decisions otherwise system can reach incorrect conclusions.

2.3. Natural language processing

Natural language processing is mostly used to waste less time trying to find usable information from the data. "Natural Language Processing (NLP) has become an increasingly important area of research in the field of finance, as it enables the analysis of unstructured financial data, such as news articles, social media posts, and financial reports." (Zaremba and Demir, 2023:02). It is a division of artificial intelligence that supports machines to learn human language and communication. "NLP attempts to address the inherent problem that while human communications are often ambiguous and imprecise, computers require unambiguous and precise messages to enable understanding." (Fisher et al., 2016:01). This model can be trained to analyze unstructured data or information issues that could affect the stock market.

Natural language processing can be also used for text analysis, by transforming the unorganized data that comes from the investors into a single format particularly could be used for financial operations. "Accounting researchers have often used textual analysis to measure disclosure sentiment, readability, and disclosure quantity; to compare disclosures to determine similarities or differences; to identify forward-looking information; and to detect themes." (Bochkay et al., 2023:01)

2.4. Cloud computing

Cloud computing offers storing and progressing the data to the companies. Cloud technology helps businesses to boost their services according to increasing traffic. If the traffic and demand in the platform decreases all of the improvements could be pulled back. As such cloud-based solutions help companies to improve cost-effectiveness by following the level of traffic and taking actions smoothly. Cloud-based technology improves companies by helping to transform themselves according to shifting market demands. This technology protects the business by guaranteeing customers steady service and guarding financial tasks. Cloud technologies allow users to enter accounts regardless of the device and wherever they are. This way businesses can put their services in a global market. Businesses only need to build cloud data centers in certain areas of the world. "Cloud accounting provides the software which can be used via the internet and the client only buys the right to use it. Cloud accounting is modernizing the entire business environment, by the way accounting applications are used." (Mihai and Dutescu, 2022:853). "According to Flexera's 2024 State of the Cloud Report, 33 percent of businesses in the finance industry are planning to use a combination of on-premise and cloud computing software (SaaS) on financial documents¹. 35 percent of businesses in the finance industry are planning to use a combination of on-premise and cloud computing software (SaaS) in various areas such as personally identifiable information (PII), protected health information (PHI), and consumer data. Nowadays, 44 percent of the financial services businesses' information is in the cloud. It is expected that within the next year, it will increase to more than half of the businesses at 52 percent ².

2.5. ChatGPT

ChatGPT has been a big topic since it has been released. An AI-based program that can respond to questions, give suggestions, and complete tasks brings all the attention to itself. Since this program responds to you according to given data it could be useful for finance as well. "ChatGPT can perform tasks such as stock price prediction, investment management, and asset management, similar to financial robo-advisors." (Ali and Aysan, 2023:15). In this part, we asked ChatGPT "What do you think about the usage of artificial intelligence in finance?". ChatGPT responded to this question with "AI in finance holds great promise for revolutionizing the industry through enhanced efficiency, accuracy, and innovation. However, it also poses significant challenges that must be carefully managed. Balancing the benefits of AI with the need for ethical considerations, robust security, and regulatory compliance will be key to its successful integration into the financial sector." (ChatGPT, 2022).

2.6. Artificial intelligence (AI) solution based companies in finance

In this part, the examples of companies that offer services based on artificial intelligence in the finance industry will be presented.

- **Range:** Range is a fintech company based in McLean, Virginia. It is based on memberships that allow money guidance and offers DIY fund guidance tools using machine learning.

¹ <https://info.flexera.com/CM-REPORT-State-of-the-Cloud>

² <https://internationalbanker.com/finance/how-can-financial-services-firms-make-the-most-of-the-cloud/>

The company also offers retirement and education planning, investment and estate planning services (Schroer, 2024)

- **Kensho Technologies:** Kensho Technologies is a branch of S&P Global company, it is based in Cambridge, Massachusetts. This company produced training in machine learning and software that analyzes data to evaluate documents. Data training software combines natural language processing, machine learning, and cloud computing. This way, software can respond to complicated financial concerns without any difficulty. According to Forbes, customers of Kensho were able to predict the drop in the British pound not long after the United Kingdom left of European Union thanks to an AI-powered database (Schroer, 2024)
- **Tegus:** Tegus is an AI and machine learning algorithm-based company in Chicago, Illinois. This company offers their customers new investment chances. They do investment research with AI-generated abstracts from a professional's point of view (Schroer, 2024)

3. USAGE OF ARTIFICIAL INTELLIGENCE (AI) IN ACCOUNTING

In this chapter, we will explore the usage of artificial intelligence in accounting. "Wider application of AI in accounting and auditing profession is expected to provide the benefits of greater efficiency, productivity and accuracy" (Hasan, 2022:440). Research by Odonkor et al. (2024:172) shows that "AI improves the accuracy and efficiency of financial reporting, automates routine tasks, and enables predictive analytics for strategic decision-making". AI can also be utilized in accounting to detect fraud (Mintz, 2021). On the other side, interesting is the fact that resistance to change is reported as one of the significant obstacles within the organization when adopting artificial intelligence in accounting practice (Odonkor et al.,2024). The connection and relationship between some areas of artificial intelligence is shown in Figure 1. and further described in the next chapter.

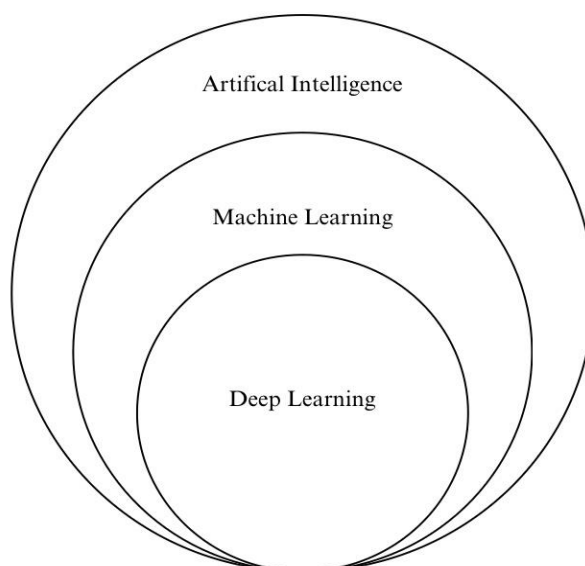


Figure 1: Relationship between artificial intelligence, machine learning, and deep learning (Source: modified by the author according to Ng and Alarcon (2021). Artificial Intelligence in Accounting Practical Applications)

3.1. Machine learning

Accounting uses machine learning algorithms for decision-making and performing tasks without using certain programming. Recognize and build patterns, gain data from patterns, create algorithms from patterns, and upgrade those algorithms according to feedback. The Big Four accounting firms have made investments in technological innovation and tools that could

be used in machine learning (Kokina and Davenport, 2017.) This application also saves time, strengthens the preciousness of financial records, and lowers the odds of mistakes. Machine learning can automate regular tasks such as data entry, reconciliation, and report generation. This helps companies to decrease their expenses and manual labor.

3.2. Deep learning

Deep learning is a division of machine learning (illustrated in Figure 1). Deep learning helps companies to transform unstructured data into machine-readable information. This benefits companies because it improves the accuracy of machine's predictions on the unstructured data. Deep learning models are used in creating finance-focused chatbots to give customers a better and more customized experience. These chatbots can respond to questions, give recommendations according to client's requests, and perform regular cone actions automatically. "In the financial industry, deep learning is used for optimal execution, trading strategies, the hedging of complex risks, fraud detection, portfolio advising (robo-advising), and textual analysis such as financial statement analysis and market sentiment measures." (Bertucci et al., 2022). Insurance companies benefit from deep learning algorithms to predict risks by analyzing client's health records, data from wearable technology devices, age, job, income, and loan payment history.

3.3. Natural language processing

Natural language processing defines the technology that allows machines and computers to break down and understand human language. This way computers can work effectively with the human language without turning the language into machine-readable text. "The accounting, auditing, and finance domains frequently put forth textual documents intended to communicate a wide variety of messages, including, but not limited to, corporate financial performance, management's assessment of current and future firm performance, analysts' assessments of firm performance, domain standards and regulations as well as evidence of compliance with relevant standards and regulations." (Fisher et al., 2016:01). Auditing is a process that includes analyzing financial statements and ensuring that all of the statements have no problem with the legal standards. For auditors, this process requires attention to spot misstatements. Natural language processing enhances the process of auditing. In addition to that NLP can automatically gather usable information from bills and receipts. Automate the data entry of the tax documents and transfer it to accounting systems.

3.4. Data mining

Data mining in accounting helps companies to analyze big data to detect unknown patterns. It is commonly used in structured data. By using data mining in the process of auditing, auditors can find fraudulent purchases or unreliable transactions. Data mining is not a subset of artificial intelligence however they share common interests (Figure 2). Financial data become available, is one of the most enticing application areas for these developing technologies.

Figure following on the next page

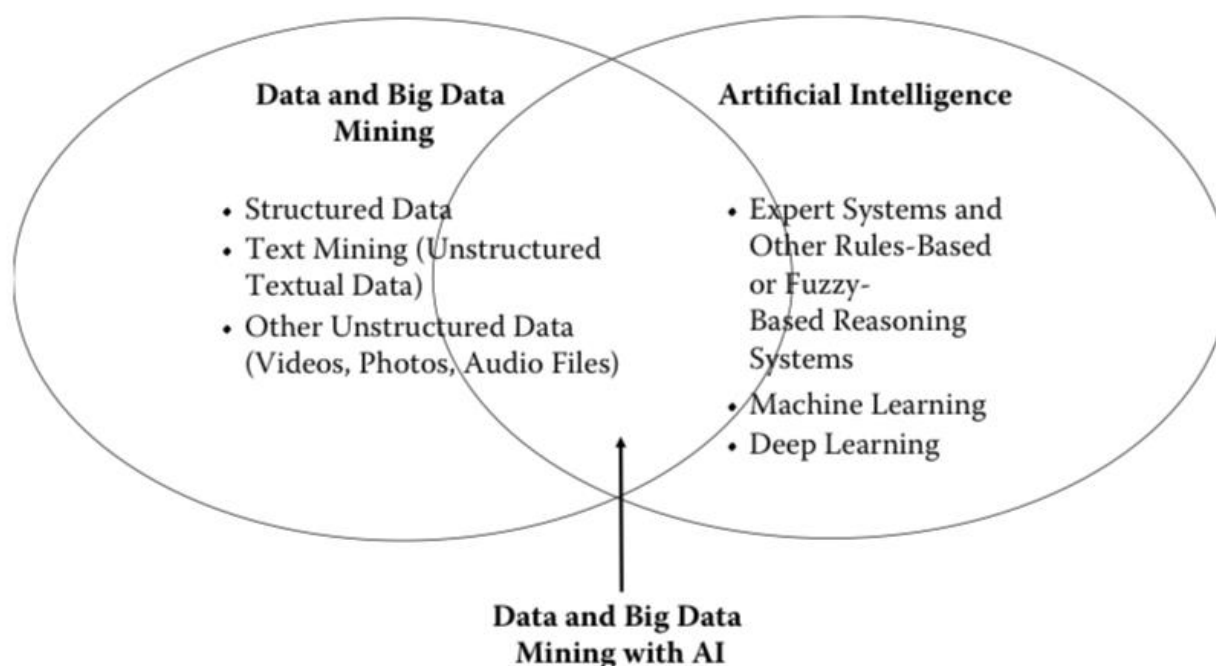


Figure 2: Relationship between data mining and artificial intelligence.
 (Source: Ng, C. and Alarcon, J. (2021). *Artificial Intelligence in Accounting Practical Applications*)

Data mining, also known as knowledge discovery or data discovery, is a process that entails studying and analyzing data from various sources, evaluating, and combining it into more useful and important information - information that can be used to increase revenue and profits, reduce costs, or do both.” (Hariharan, 2018:73).

3.5. ChatGPT

ChatGPT is a platform based on artificial intelligence technologies. Chatbots can reply to users regarding any topic. It could be useful in the accounting area with the ability to shorten the process for the accountants. ChatGPT can perform automated tasks that have been done regularly in the finance industry such as tax filing, data analysis, record-keeping, and forecasting (Khan and Umer, 2024). Since the program can provide real-time accurate financial information it can analyze the situation and make recommendations. We have asked ChatGPT "What do you think about the usage of artificial intelligence in accounting?". ChatGPT replied to our question with "AI in accounting offers significant advantages by automating routine tasks, enhancing accuracy, providing deeper insights, and improving decision-making. However, the adoption of AI also brings challenges, including data security, system integration, and the need for transparency. Addressing these challenges through robust security measures, ongoing training, and the development of explainable AI will be key to realizing the full potential of AI in accounting.” (ChatGPT, 2022).

4. ARTIFICIAL INTELLIGENCE (AI) IN GREEN ACCOUNTING AND GREEN FINANCE

Businesses today are experiencing a transition from traditional accounting and finance to sustainable/green accounting and finance. Green (sustainable) accounting is the practice of measuring, analyzing, and reporting a company's social and environmental impacts. Today businesses need accountants and financiers trained to accurately and comprehensively measure

sustainability. Sustainability is a rising topic all around the world, and almost every sector is interested in contributing. "Artificial intelligence plays a key role in the green economy to generate monetary and environmental rewards." (Ravan Ramzani et al., 2024:44). Artificial intelligence can evaluate large data and make investment predictions for the areas that could include climate change and factors of ESG (Environmental, Social, and Governance). Natural language processing algorithms help businesses analyze the operation of potential investments by detecting if there could be an ESG risk. "AI helps investors to collect, analyze and interpret more information than ever before when accounting for environmental, social and governance (ESG) related risks and opportunities facing companies as well investor portfolios. It also allows sustainable investors to process massive amounts of data, big data, that hold crucial information for ESG investing." (Musleh Al-Sartawi et al., 2022:2). The Climate Action Data Trust (CAD Trust) automates the collection and evaluation of the data while restructuring carbon registries, providing accurate data for emissions; this enables improved risk management, precise forecasts, and productive compliance reportage for carbon credits in the finance industry (Joycewady, 2023). "The application of AI technologies, such as the Financial Maximally Filtered Graph (FMFG) algorithm, has demonstrated remarkable capabilities in processing and analyzing vast datasets, thereby facilitating more informed and sustainable investment decisions." (Oyewole et al., 2024:604). Decisionmakers such as financial institutions, and stakeholders in the green finance industry should adapt technological developments and take action to create a positive environment that encourages innovation and backs up the financing of projects that involve renewable energies (Hui and Loang, 2023).

5. CONCLUSION

Improving technology in artificial intelligence makes new developments popular in every industry. Accounting and finance benefits from artificial intelligence by using technologies such as machine learning, deep learning, natural language processing, expert systems, cloud computing, and data mining. Algorithms decrease the workload of the workers in these industries. Developing technologies allows companies to respond to their customers quickly and show them predictions for investments according to their desires. Artificial intelligence tools are making the process of accounting and finance management easier. In addition to that companies can detect shifting market demands and get prepared accordingly. Research by the author Abdulhay (2024) highlights the importance of using AI in accounting, emphasizing its importance in detecting and preventing fraud, preserving financial integrity, and fostering professional trust. Evaluating the strengths and limits of artificial intelligence for accounting and business problems will help us detect the skills and training required to use AI in these areas (Musleh Al-Sartawi et al., 2022). It is important to create an encouraging environment for the projects for Artificial intelligence in the finance and accounting industry. According to Greenman (2017), AI won't replace accountants in the accounting industry but it will change the focus. Li and Zheng (2018) confirm it, even though artificial intelligence caused some of the accountants to lose their jobs, in the long run, AI can't replace accountants. Supporting the usage of artificial intelligence benefits green accounting and green finance as well. Sustainability is essential for every aspect of our life. Although it might look like there is no correlation between artificial intelligence with green finance and green accounting, artificial intelligence could be used to take the right steps. Artificial intelligence in finance and accounting can assist companies in making sustainable investments. According to research done for sustainability reporting, companies should explore their options in artificial intelligence technology to benefit from the automated sustainability reporting process (Ahmad et al., 2023).

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THE IMPACT OF THE ORGANIZATIONAL FACTORS ON THE MATURITY OF DIGITAL BUSINESS MODELS FOR CHARTER IN THE NAUTICAL TOURISM

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ABSTRACT

Nautical tourism is important for the development of tourism both in Croatia and in the world. The ports of nautical tourism, charter and cruises are the basic activities of nautical tourism. There are, and in this thesis secondary and additional activities are listed. The hypothesis chosen for this paper is the one that speaks of the importance of employees' organizational skills for progress, i.e. the maturity of digital business models. The research for this paper was conducted with charter companies. Charter activity includes the rental of vessels for recreational purposes, which mainly refers to vessels with accommodation facilities. This paper found that the organizational skills of employees contribute greatly to the maturity of charter companies' digital business models and that it is advisable to invest in innovation and organizational culture so that the business evolves according to market demand.

Keywords: *employee's organizational skills, organizational culture, innovations, nautical tourism, charter*

1. INTRODUCTION

According to previous studies, organizational factors are very important for digital maturity. For example, the results of the study by Kane et.al. (2016) show that digitally mature companies are continuously working on building an organizational culture suitable for the digital age, continuously promoting innovation and adaptability and investing in building digital skills among their employees. Similar results were provided by a slightly earlier study by Kane et.al. (2015). In their study on digital maturity, Gill and Van Boskirk (2016) also point to the great importance of organizational factors in achieving digital maturity and in particular refer to the key role of a digitally adapted organizational culture as well as innovation and the encouragement of employees to develop digital skills. According to Kozina (2019), the ability to innovate and transform is also of great importance in the context of digital maturity, and the same article also emphasizes the important role of effective employee knowledge. Schwer et al. (2018) also find very important organizational factors in their systematic analysis of digital maturity variables, including employee skills, organizational culture, adaptability and innovation.

2. NAUTICAL TOURISM INDUSTRY

Nautical tourism is in many ways specific compared to traditional forms of tourism, and the peculiarities of this form of tourism have been emphasised by numerous authors. For example, the author Krce Miočić (2011) emphasises the specificity of the term destination in the context of nautical tourism and defines destinations in nautical tourism as "a place where a sailor stays or sails with his ship." In addition, this author points to the fact that the main motive is the navigation of sailors and that sailors are highly mobile visitors, which is also stated in the article by Jugović et al. (2013), who emphasise precisely this mobility of sailors with almost daily changes of location as one of the main differences from other forms of tourism. Similarly, the author Gračan (2005) points out that what characterises nautical tourism is the motive of recreation and leisure on a boat and on the water, as well as the connection with specific sports and recreational facilities such as sailing, diving, rowing, etc. Another difference identified by Mikačić (2002) is that nautical tourism has a less pronounced seasonal character than stationary tourism and that boaters have certain characteristics that distinguish them as a segment from other tourists. Nautical tourism can be defined as "the totality of polyfunctional activities and relationships caused by the stay and use of tourist-sailors in nautical tourism ports or outside these vessels, as well as other facilities related to nautical tourism for the purpose of recreation, sports, leisure and other needs", or with a shorter definition: "Nautical tourism is a multifunctional tourist activity with a very pronounced maritime component" (Luković, 2007.). Furthermore, in several articles from 2007 and 2009, the author Luković presents various classification options for nautical tourism, of which he emphasizes the division of nautical tourism into the three main basic activities: Ports for nautical tourism, charters and cruises. At the same time, the corresponding designation according to the NKD is given for each of the above-mentioned activities. An analogous classification can also be found in the work of other authors, such as Alkier et.al. 2015, where the nautical tourism offer is divided into three main sub-sectors: the marina industry, the charter industry and the cruise industry. In addition to these three basic activities, Luković (2009) also lists a number of secondary and complementary activities within nautical tourism, as shown in the next table.

NAUTICAL TOURISM INDUSTRY		
SECONDARY ACTIVITIES	BASIC ACTIVITIES	ADDITIONAL ACTIVITIES
Diving tourism Surfing Rafting Divers Rowing Fishing Tourism Robinson Tourism Lighthouse Tourism Other similar forms	Nautical Tourism Ports Charter Cruising	Shipbuilding of mega yachts Production of small vessels Production of equipment for nautical tourism Skipper services Sailing schools Research institutes and educational centres Other services

*Table 1: Basic, additional and secondary activities in the nautical tourism industry
 (Source: arranged according to Luković, T., 2009.)*

As it is visible from the table, in addition to the three basic activities, nautical tourism also includes numerous secondary activities that comprise various specific tourist activities in addition to shipping itself. Furthermore, there are a number of additional activities that are closely related to the basic activities of nautical tourism. Besides the additional activities directly listed in the table, the whole range of different business activities can be summarised under the category of other services, such as maintenance and repair of ships, transfers, ship

supply and many others. Some authors (e.g. Favro and Saganić 2007, Favro et.al. 2008) use the term nautical economy for nautical tourism with additional activities such as small shipbuilding, etc.

2.1. Charter in Nautical Tourism

The charter activity includes the hiring out of ships for leisure purposes, especially ships with accommodation facilities. Although, according to the Law on Tourist Services (Art. 85), the term charter also includes the rental of a vessel without accommodation services, this is by far the rarer form of chartering, and it should be noted that the rental of very small vessels such as pedal boats, scooters, rowing boats and the like is not even considered part of charter activities in practice. However, the authors (Luković et.al. 2015) also refer to the charter segment without accommodation services, which in practice mostly refers to the daily rental of speedboats and similar vessels. Apart from the aforementioned subdivision into chartering with or without accommodation, the types of chartering differ considerably depending on the type of vessel. When analyzing chartering with accommodation, which is the focus of this study, the authors (e.g. Luković 2009) divide charter vessels into motor yachts and yachts with sails (sailboats), while in the practice of charter activities there are also specific categories of charter vessels, such as catamarans and sailboats or gulets. Some authors (e.g. Gračan et.al. 2011) highlight megayachts as a special category, which is in fact also supported in business practice, as this type of charter activity is often handled by separate companies. Overall, however, the vast majority of charter vessels are wasted on sailboats. It is also very common to split the charter according to crew. Thus, charter boats can be rented with or without crew, with crewed rentals being further divided into skippered-only and fully crewed rentals. Lapko (2017), for example, points out the usual division into bareboat charter, skippered charter and crewed charter, with the latter option applying primarily to large yachts.

2.1.1. Products and Services in the Charter of Nautical Tourism

When it comes to the question of what products and services are included in the charter, it can generally be said that this depends on the nature of the ship and the nature of the charter itself. In a narrow sense, a vessel that is chartered can be considered a charter product, and in a broader sense, a charter product can be considered a total package of services that are delivered with the vessel, with the service component being particularly important for crewed charters. If we look at the charter product in the narrower sense, i.e. the charter vessel itself, we must first consider the relevant breakdown by vessel type. In this sense, the vast majority of charter vessels are sailing vessels (Mikačić 2002, Gračan et.al. 2011), while the remaining part refers to motorized vessels and yachts, catamarans, gulets, etc. (Šeparović, 2017). Specifically, at the beginning of this century, about three quarters of the Croatian charter fleet were sailboats (Mikačić 2002), and sailboats have maintained a similar ratio to this day. The product specifics for each of the main types of charter vessels are explained below.

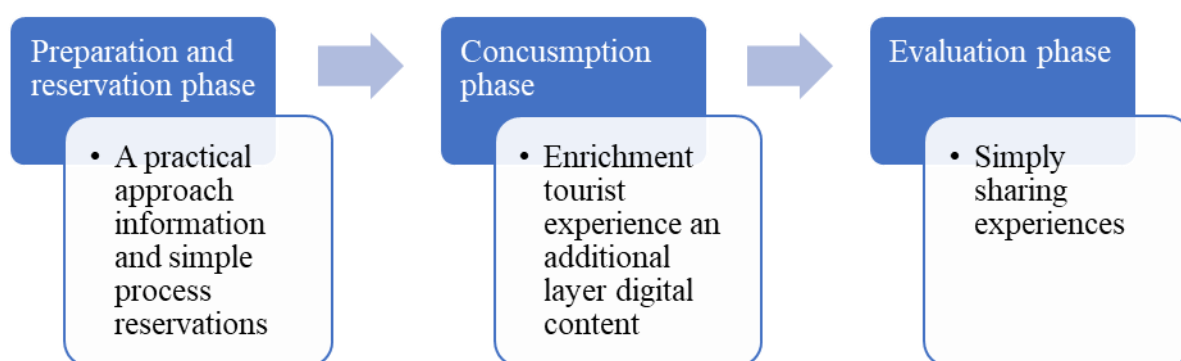
2.1.2. Additional Services in the Charter of Nautical Tourism

Looking at the charter product in a broader sense, it is important to consider not only the vessel itself, but also the additional services that round out the user experience. In the case of a crewed charter, the crew is of course an integral part of the charter product and their quality can be crucial to the overall satisfaction of the user. The role of the professional crew during the charter is quite large and Šeparović (2017) states that on smaller yachts the crew usually consists only of the skipper and possibly also the hostess, i.e. housekeepers, while on large yachts it is supplemented by a professional cook and sailors and possibly a watchman. However, there are other elements of the charter product that are also relevant to unmanned charters. First of all, an important element of the charter product is the acceptance of the users when handing over

the vessel in the initial charter database, as well as a possible transfer to the charter base if the users do not arrive with their own vehicle. At the same time, the authors Trstenjak et.al. (2015) emphasize the great importance of the quality of staff at the charter base as one of the most important determinants of the overall level of charter service. Furthermore, the offer of charter companies usually includes various additional services as well as additional equipment that can be ordered with the vessel. Optional services include, for example, special insurance and the service of equipping the vessel with the necessary supplies in advance, while additional equipment often includes, for example, an outboard motor for an auxiliary boat, special sails such as a spinnaker or (Kalčić, 2016) equipment for certain water sports. Finally, it is also important to point out that flotillas in the above-mentioned charter programs include the overall product and the flotilla program itself with all the joint activities offered therein. Although the above services are largely under the control of the charter company, it is important to remember that the charter product in the broadest sense also includes elements that are not under the direct control of the charter provider itself. First and foremost, this is the quality of the port for nautical tourism as well as the quality of the overall nautical destination and the additional services available at the destination.

3. DIGITAL BUSINESS MODELS IN TOURISM

Tourism offers a wide range of opportunities for the application of digital business models, depending on the specific characteristics of the tourism product. In the context of digital services in tourism, Marić and Zoroja (2019) emphasize the great importance of presenting information about the tourist offer and services, as well as about the destination itself. Therefore, in general, the ease of access to relevant information is one of the fundamental starting points for the development of digital business models in tourism. The areas of application of digital business models in tourism are truly numerous and span several stages of the tourism experience. Digital business models were first used for the stage of preparation of a tourist trip and in particular for the digital insight of relevant information and for the reservation of various tourist services, to then be extended to the consumption stage over the time of the tourist services themselves and the stage after the tourist experience (Beynon et.al. 2014). In the next figure, three phases of the tourism experience are shown and, in addition to the basic phase, the focus of the digital business models that are geared towards this phase is highlighted in each case.



*Figure 1: Digital business models by phases of tourist experiences
 (Source: arranged according to Beynon et.al. 2014.)*

As the figure shows, digital business models covering the first phase of the tourist experience focus primarily on providing practical and easily accessible information about the destination, accommodation, transportation, attractions and other tourist services, i.e. making it as easy as possible to select and book services and prepare for the trip.

In relation to this phase, Jensen and Wagner (2018) point out that it is an emotionally intense process that requires a high level of trust due to the intangible nature of the services and the need to share personal and financial data when booking. In this first phase, the authors Maric and Zoroja (2019) point out, among other things, the important role of certain web services, but also social networks, which have become important both for the choice of a destination and for the selection of accommodation and other services at the destination. The same authors also describe that tourists often use intermediary web services and social networks to share impressions, photos and tips related to tourism services, which is also important for the second and third phases of digital support of the tourist experience. During the consumption of tourism services, i.e. during the tourism experience, digital support can include digital guides, maps, interaction via social networks, mobile applications, various audio and video devices, kiosks, etc. (Beynon et.al. 2014), and increasingly the use of augmented reality (AR) and virtual reality (VR) technologies in tourism is also being developed. In this sense, Beynon et al. (2014) speak of the active design of digital tourism experiences, with which they enrich tourist attractions with an additional layer of content. Specific digital business models are being developed for this second phase of the tourism experience, and it is to be expected that the technology will continue to develop and become more prevalent. Of course, there are also digital business models that place great emphasis on the third phase of the tourist experience, i.e. the evaluation and sharing of impressions after the tourist experience. The results of this phase often serve as a feedback loop for the previous phases and are particularly useful for other tourists when planning their trips.

4. EMPIRICAL RESEARCH

or digital business models for charters in nautical tourism, no relevant previous research was found from which the necessary data could be extracted and therefore it was necessary to conduct empirical research for this activity, which of course includes the collection of primary data. For the collection of primary data in empirical research, the questionnaire survey method was chosen, mainly because of the possibility of analysing the collected data quantitatively. There are numerous studies investigating the field of online business in tourism that use precisely the questionnaire instrument to collect primary data (e.g. Park et.al. 2010, Lee and Kim 2019, Berbegal-Mirabent et.al. 2016, Tsang.et.al. 2010, Dutta et.al. 2017), with most of these authors using the 5-point Likert scale to measure the variables, which was also used in this research. As there are no dominant digital platforms for the charter sector in nautical tourism, the research participants were identified through the process of determining the relevant population and then the appropriate sample. Geographically, companies from all over the world were analysed, and participants from the Republic of Croatia were also included. In this way, the population of 932 companies was determined, all of which were invited to participate in the research. After a series of reminders, an overall response rate of 17.81% was achieved and the questionnaires were collected from 166 companies. For the purpose of this research, the results for the hypothesis: Organizational factors influence the maturity of digital business models for charter in nautical tourism, will be presented here.

Table following on the next page

		DIGITAL SKILLS OF EMPLOYEE S	ORGANIZATION AL CULTURE	ABILITY TO ADAPT	INNOVATI ON	ORGANIZATIO NAL FACTORS	MATURITY OF DIGITAL BUSINESS MODEL
DIGITAL SKILLS OF EMPLOYEES	Pearson Correla tion	1	,754**	,641**	,642**	,872**	,616**
	Sig. (2- tailed)		,000	,000	,000	,000	,000
ORGANIZATIO NAL CULTURE	Pearson Correla tion	,754**	1	,702**	,722**	,900**	,715**
	Sig. (2- tailed)	,000		,000	,000	,000	,000
ABILITY TO ADAPT	Pearson Correla tion	,641**	,702**	1	,744**	,859**	,604**
	Sig. (2- tailed)	,000	,000		,000	,000	,000
INNOVATION	Pearson Correla tion	,642**	,722**	,744**	1	,889**	,658**
	Sig. (2- tailed)	,000	,000	,000		,000	,000
ORGANIZATIO NAL FACTORS	Pearson Correla tion	,872**	,900**	,859**	,889**	1	,737**
	Sig. (2- tailed)	,000	,000	,000	,000		,000
MATURITY OF DIGITAL BUSINESS MODEL	Pearson Correla tion	,616**	,715**	,604**	,658**	,737**	1
	Sig. (2- tailed)	,000	,000	,000	,000	,000	

*Table 2: Correlations of variables relevant to hypothesis
 (Source: Zentner, H., Doctoral dissertation, 2020.)*

A look at the correlation coefficients obtained shows that there is a statistically significant positive relationship between all relevant pairs of variables, indicating that this hypothesis is likely to be supported. The above is examined in detail by testing the hypothesis itself and each of its sub-hypotheses using SEM analysis. The univariate normality is satisfactory for most of the observed variables, except that for the variable SPOP the critical value of the coefficient symmetry is slightly above the recommended level. However, this deviation is not an obstacle to continue the analysis, since the condition of roundness, whose critical value is within the recommended range (<7), is much more important for the evaluation of multivariate normality for the needs of the SEM technique. Ultimately, the condition of multivariate normality is met, as the Mardia indicator for in this case is 32.72, which is less than $p(p+2)$, i.e. less than $7*9$. From the results presented, conclusions can also be drawn about the relationship between the two constructs analysed. Their relationship is characterized by a positive, statistically significant parameter of 0.84, i.e. a standardized parameter of 0.81. Thus, if the organizational factors improve by one standard deviation, this leads to an average increase in the maturity level of the digital business model by 0.81 standard deviations. It can be concluded from this that there is a positive influence of the organizational factors on the maturity level of the digital business model, i.e. that hypothesis is confirmed.

5. CONCLUSION

The paper confirms the importance of organizational capabilities for the development of digital maturity. Encouraging employees to innovate and invest in knowledge of IT systems proves to be important for the continuity of today's economy.

As stated in the paper, previous research shows that digitally mature companies are continuously working to build an organizational culture suitable for the digital age, encourage innovation and adaptability, and invest in building the digital skills of their employees. In terms of the organizational factors analysed in the author's research, there was room for improvement in innovation and the timely implementation of new trends in business practice. It is recommended that further research is conducted on chartered agencies using the semi-structured in-depth interview method to gain a deeper insight into the key aspects of digital business.

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APPLICATION OF PUBLIC RELATIONS MODELS IN THE CROATIAN HIGHER EDUCATION SYSTEM

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ABSTRACT

The research aimed to explore and describe the models (practices) and roles of public relations in the Croatian higher education system, a field that is almost theoretically and practically underdeveloped. The empirical phase of the research was based on a quantitative approach and descriptive analysis. Based on previous research and a theoretical review of the literature, a survey questionnaire was defined to comprehensively investigate the state of public relations at Croatian public and private universities, polytechnics, and colleges. The research was conducted on a non-probabilistic purposive sample or expert sample, considering that the respondents were responsible persons for communication, with a detailed insight into the practice of public relations. Based on the conducted research on the organization, position, and role of public relations in higher education institutions in Croatia, it was found that most higher education institutions do not have established public relations offices within their organizational structure, and therefore no systematic public relations positions, which is reflected in the practice and application of public relations in higher education. The results of the descriptive analysis show that most officials responsible for communication with key publics do not have formal education in public relations, and their work is reduced to technical-operational functions, with a smaller percentage involved in planning public relations programs and strategies. The research also found that higher education institutions often practice one-way public relations models. The press agency model, as the most frequently used public relations model, indicates that higher education institutions have not yet recognized the advantages of two-way interaction with key publics, and two-way symmetrical communication, which achieves quality relationships with all segments of the public, is not optimally utilized.

Keywords: *descriptive analysis, one-way communication, two-way communication, public relations models, higher education*

1. INTRODUCTION

Constant changes in markets, the degree of technological changes, increased competition, and insufficient financial support are just some of the problems faced by many higher education institutions. Academic freedom and competition are extremely developed and strong, and the number of students is decreasing. Enrolling the optimal number of students is a serious problem for most higher education institutions in Croatia, making it crucial to use various communication activities and public relations strategies. To achieve this goal, higher education institutions should strive to build relationships with their key publics. Daily communication with current and former students, professors, employees, media, local communities, and government bodies should not be neglected but carefully planned, initiated, and managed by specialized public relations personnel. The needs of key publics should be recognized and considered, prompting an adequate response. Communication planned and managed in this way will satisfy the expectations of the public, and public relations, through a strategic approach (Grunig and Grunig 2006) and the application of two-way models, will participate in the

creation of overall communication processes at universities and strengthen their positive reputation and image. The subject of research and analysis in this paper is the original public relations models (Grunig and Hunt 1984) in the Croatian higher education system: *the press agency model, the public information model, the two-way asymmetrical model, and the two-way symmetrical model*. According to Miočić (2008: 36), these models explain the role and practice of public relations in organizations and can be viewed as "*a simplified presentation of the values, goals, and behaviors of an organization when practicing public relations*" (Tomić, 2013: 146). Although almost 40 years have passed since the creation of these models, many organizations and institutions still apply them, and scientists continue to analyze and research them intensively (Miočić, 2011: 1). The mentioned models are described by the nature (one-way vs. two-way) and purpose of communication (asymmetrical vs. symmetrical), where one-way communication implies only the dissemination of information (emphasis on monologue), and two-way communication implies an exchange of information (emphasis on dialogue). Asymmetrical communication is unbalanced because the flow of information between organizations and their publics is not aligned (Grunig and Hunt, 1984: 23). Symmetrical communication, according to Grunig and Grunig (1992: 289), is balanced and implies mutual, balanced communication. The goal is to achieve mutual understanding, not persuasion (Miočić, 2008: 37). Public relations models have different goals, purposes, and roles and can be found in different organizational environments in practice (Tkalac Verčić, 2016: 20). Based on numerous studies conducted by Grunig and Grunig (1992: 297, Grunig and Kim, 2021: 16), they conclude that organizations practice different public relations models in different situations and for different publics. Also, depending on the situation, problem, and strategy, the mentioned models can be equally effective, but the two-way symmetrical model, based on compromise, understanding, and negotiation, is considered the most effective. Public relations in higher education are a poorly represented topic in scientific and professional papers, while empirical studies on models and roles of public relations in Croatia are few and of limited scope. This paper represents the first step in thematizing and researching the original models of public relations in higher education institutions, and subsequently in the practice of public relations in Croatian educational institutions in general.

2. PUBLIC RELATIONS MODELS

2.1. The Press Agency Model

The press agency model, epitomized by Phineas Taylor Barnum, relies on propaganda and advertising. This model puts the public in a subordinate position, that is, an object in communication. Communication is one-way and flows in the direction of the organization to the public (Miočić, 2011: 33). The press agency model does not rely on scientific research; instead, it is limited to informal observation and operates through the dissemination of information. Various organizations use press agency model for promotional purposes, including sports, theater, cinema, show business, and sales-oriented organizations (Kunczik, 2006; Miočić, 2011).

2.2. The Public Information Model

The purpose of this model is to inform the public and provide accurate (but not unfavorable) and truthful information, which may sometimes be incomplete. Ivy Ledbetter Lee, the most prominent advocate of the public information model, believed that the mission of an organization was to communicate the truth about its actions. Grunig and Grunig (1992: 288) emphasize that the public information model involves a one-way concept of communication, where information dissemination flows from the organization to the public. A one-way approach implies the use of communication programs that are not based on research and strategic planning and do not address the needs and aspirations of the public.

Ana Tkalac Verčič (2016: 52, in Grunig and Grunig, 1992: 289) highlights that both models (the press agency model and the public information model) are asymmetric because they attempt to change the behavior of individual publics but not organizations. Although initially conceptualized as one-way and symmetric, James Grunig (1989) eventually changed his opinion on the model's concept, defining the public information model as asymmetric. The reason is that practitioners of the public information model selectively disseminate information about their organization and do not engage in dialogues with key publics (Grunig and Grunig, 1992: 290). This model is practiced by governmental structures, nonprofit associations, organizations focused on business processes, and educational institutions (Grunig and Hunt 1984: 26).

2.3. Two-Way Asymmetric Model

The development of this model is associated with Edward L. Bernays, who first introduced the two-way concept of public relations in his book *"Crystallizing Public Opinion"* (1923), thereby influencing the development of modern public relations. Since the model was based on asymmetric communication, the flow of information between organizations and their publics is unbalanced (Grunig and Hunt, 1984: 23). Information obtained through research does not benefit the public; instead, it is used *"to strengthen the position of the organization attempting to persuade and convince the public to change"* (Miočić, 2011: 36). The purpose of this model is to change the attitudes and behaviors of the public, while the goals, policies, or other forms of organizational behavior remain unchanged. Kunczik (2006: 157) argues that the asymmetric perspective in this model also implies a clear assumption that the public will accept the negative consequences of managing organizations. Grunig (1989) outlines the basic assumptions underlying the asymmetric model of public relations: *internal orientation, system closedness, effectiveness, elitism, conservatism, tradition, and centralization of authority*. This model finds most of its followers in agencies and competitive businesses (Grunig and Hunt, 1984: 26).

2.4. Two-Way Symmetric Model

Building on the foundations of the two-way asymmetric model, the two-way symmetric model was developed with the purpose of understanding the relationship between an organization and its public, as well as seeking a balance between their interests. Scott Cutlip was the first scientist and theoretician who advocated and applied this model. Grunig and White (1992: 39) state that the symmetric model utilizes research and dialogue to manage conflict, enhance understanding, and build relationships with the public. Communication in this model is two-way and operates in the relationship between the organization and the public, with the organization not dominating the communication process but both sides participating in dialogue and seeking to adapt to each other (Miočić, 2011: 38). According to Tkalac Verčič (2016: 52), a symmetric relationship implies behavior change equally on the part of both the public and the organization. However, it is important to emphasize that in practice, often neither side wants to change their behavior or attitudes, so the role of the two-way symmetric model lies in connecting the two groups and achieving mutual understanding and dialogue. Botan and Hazelton (1989: 29, in Miočić, 2011: 38) believe that this model often involves bargaining and negotiating with the public, using various conflict resolution strategies to achieve harmonious change in the attitudes and behaviors of both sides. According to Grunig (1989: 38), symmetric communication is based on the following assumptions: *holism, mutual dependence, system openness, dynamic equilibrium, equality, autonomy, innovation, management decentralization, responsibility, conflict resolution, and internal group liberalism*. Grunig and Hunt (1984: 26) found that the symmetric model is most applied in socially oriented companies and public relations consulting agencies.

3. RESEARCH METHODOLOGY

Quantitative research was conducted in this study on the original models and roles of public relations in higher education institutions in Croatia. All public and private universities (except university constituents), polytechnics, and colleges that existed at the time of the research implementation by the provisions of the *Law on Scientific Activity and Higher Education (Zakon o znanstvenoj djelatnosti i visokom obrazovanju)* participated in the research¹. Based on previous research and synthesis of relevant literature, a structured questionnaire was defined, containing 25 questions, mostly closed-ended, and individual responses were measured on a 5-point Likert scale. After reviewing the questionnaire, two higher education institutions with the status of polytechnics and colleges responded that they did not want to participate in the research because they did not have an organized public relations office or a systematized position for that area within their organizational structure, and therefore they considered themselves not competent enough to provide authoritative answers. The research was conducted on a non-probabilistic purposive sample or sample of experts, considering that the respondents were individuals responsible for communication with key publics of higher education institutions. The data obtained through the online survey were processed using the statistical program IBM SPSS Statistics 20 (*Statistical Package for the Social Sciences*). Descriptive analysis and inferential statistics were used for the interpretation and analysis of the obtained data, including the non-parametric chi-square (χ^2) test of independence using the *Crosstabs* procedure to test research hypotheses.

The study aimed to explore the current state of public relations and identify original models and roles of public relations in Croatian higher education institutions. The following research hypotheses were based on the defined research objective:

- *H1: Croatian higher education institutions use outdated models of public relations (press agency model and public information model).*
- *H2: There is a statistically significant difference in the selection of public relations models between public and private higher education institutions.*
- *H3: There is a statistically significant difference in the selection of public relations models depending on the type of higher education institution.*

3.1. Research Results

A total of 45 respondents participated in the research, with 26 from the public (57.8%) and 19 (42.2%) from private higher education institutions in Croatia. Exploring the institution status, most respondents, 40%, were employed at polytechnics, 31.1% in colleges, and 28.9% of respondents at universities. Exploring the status of respondents in higher education institutions, 57.8% identified themselves as non-teaching staff (administration), and 42.2% as teaching staff. It is important to note that teaching staff often engage in public relations activities alongside their academic duties. Regarding the gender structure of respondents, the sample consisted of 62.2% females and 37.8% males. In terms of age structure, the majority were in the mature age group: 35.6% were aged 40 – 49 years, 24.4% were aged 30 – 39 years, 17.8% were aged 50 – 59 years, 13.3% were over 60 years old, and 8.9% of respondents were aged 20 – 29 years. In line with educational status, a total of 97.8% of respondents have academic education. This data is not surprising considering that the research was conducted in higher education institutions where most employees hold higher education degrees.

¹ With the entry into force of the new *Law on Higher Education and Scientific Research (Zakon o visokom obrazovanju i znanstvenoj djelatnosti)* on October 22, 2022, the possibility of establishing a higher education institution under the name of colleges was not provided for. Instead, the colleges established by the provisions of the then *Law on Scientific Activity and Higher Education (Zakon o znanstvenoj djelatnosti i visokom obrazovanju)* will become polytechnics (https://narodne-novine.nn.hr/clanci/sluzbeni/2022_10_119_1834.html).

Consequently, 57.8% of respondents hold master's degrees, 26.7% hold doctoral degrees (Ph.D.), 11.1% hold Master of Science degrees, and equally, 2.2% hold bachelor's degrees and 2.2% hold high school diplomas. Surprisingly, most respondents (60%) do not have formal education in the field of public relations. Specifically, 20% of respondents stated that they acquired knowledge in public relations through a course or seminar organized by a professional association or another institution. Only 8.9% of respondents answered that they acquired academic knowledge in public relations by completing a graduate program in public relations. A Ph.D./master's degree in communication/public relations or a related field was completed by only 4.4% of respondents, while 2.2% completed a postgraduate specialist program in public relations. Additionally, a smaller number of respondents completed an undergraduate program in public relations (2.2%) or an undergraduate/graduate program in communication (or a related field such as journalism) (2.2%). Regarding years of work experience in public relations, most respondents (28.9%) reported having between one and five years of experience. They were followed by respondents with less than a year of experience in public relations (24.4%) and respondents with over 15 years of experience (20%). The smallest percentages were respondents with 10 – 15 years (15.6%) and 6 – 10 years (11.1%) of experience in public relations. Furthermore, the sample included higher education institutions (24.4%) with 101 – 500 employees, 22.2% with 51 – 100 employees, and only 4.4% of higher education institutions with 501 – 1000 employees and 4.4% with 1000 or more employees.

3.1.1. Public Relations Models In Higher Education Institutions in Croatia

The public relations models were measured using 16 statements adapted from questionnaires used by Grunig, Grunig, Sriramesh, Huang and Lyra (1995), Kim and Hon (1998), Grunig, Grunig, and Dozier (2002), and Miočić (2011). The indicators of variables were categorized into four categories: *press agency model*, *public information model*, *two-way asymmetric models*, and *two-way symmetric model* (Table 1).

Table following on the next page

Variable code	Variables	Ordinal question number
	<i>The Press Agency Model</i>	
V1	promotion of the institution	11.1.
V2	creating a positive image and preventing/neutralizing a negative image of the institution in the public	11.5.
V3	creating publicity	11.9.
V4	evaluating the success of PR activities (by measuring the number of enrolled students or attendance at the institution's events)	11.13.
	<i>The Public Information Model</i>	
V5	dissemination of accurate information about the institution, more than promoting the institution or mediating between the administration and stakeholders/public	11.2.
V6	informing the public about the work of the institution	11.6.
V7	writing press releases and publishing publications with the latest news about the institution	11.10.
V8	evaluating the success of PR activities by measuring the number of media mentions, website visits, and/or the number of reactions to posts.	11.14.
	<i>Two-Way Asymmetric Model</i>	
V9	persuading stakeholders/public to behave in the best way for the institution	11.3.
V10	changing the attitudes of stakeholders/public in the direction that best suits the institution	11.7.
V11	researching stakeholder/public attitudes in order to communicate about the institution in a way that the public/stakeholders will accept it	11.11.
V12	determination of the success of public relations activities is measured by research (survey or similar) in order to change the attitudes of stakeholders/public towards the institution	11.15.
	<i>Two-Way Symmetric Model</i>	
V13	change of attitudes and behavior equally of stakeholders/public and management, i.e. all members of the institution	11.4.
V14	establishment of mutual understanding between the institution and stakeholders	11.8.
V15	mediation in disputes between management and stakeholders/public	11.12.
V16	determining the success and effectiveness of the public relations program (research) for the purpose of bringing together the views of the institution and its stakeholders	11.16.

Table 1: Indicators of the public relations model

The reliability of measurement scales for public relations models in the overall sample was tested using *Cronbach's alpha* coefficient ($\alpha = 0.816$), indicating a good level of reliability, i.e., confirming their validity as instruments for measuring public relations models. The obtained data were processed using descriptive statistical methods. The research showed that most respondents, 88.9% (55.6% mostly and 33.3% completely), agreed that the role and purpose of public relations in higher education institutions, primarily, is promoting the institution to the public (*press agency model*) and informing the public about the institution's activities (*public information model*). Additionally, more than 80% (60% mostly and 24.4% completely) of the respondents agreed that the goal of public relations in higher education institutions is to create a positive image and prevent unfavorable publicity (*press agency model*), and 73.3% of them believe that gaining publicity (*press agency model*) is the main task of public relations. Based on these results, it can be concluded that activities in public relations at higher education institutions mostly rely on one-way communication, i.e., *the press agency model and the public information model*. The results of the distribution of variables describing the two-way asymmetric model show that the model is mostly practiced by 44.4% (31.1% mostly and 13.3% completely) through techniques of persuading the public to behave in the institution's best interest and through public relations activities (44.4%) influencing public opinion change. The two-way asymmetric model is least practiced (20%) through conducting research (surveys or similar) for public relations services in higher education institutions to assess the effectiveness of activities in changing public opinion. The distribution of statements describing the two-way symmetric model indicates that the model mostly, 44.5% (26.7% mostly and 17.8% completely), starts from establishing mutual understanding between the institution and stakeholders.

Furthermore, only 15.6% of respondents agreed that the effectiveness of public relations programs and activities is measured by research aimed at aligning the institution's and stakeholders' opinions. However, most respondents, 53.3% (33.3% not applicable at all and 20% mostly), answered that the statement "*public relations serve as mediation in disputes between management and stakeholders/public*" does not apply to their institution. A neutral stance for the statement that "*the effectiveness of PR activities is measured by research aimed at aligning the institution's and its stakeholders' opinions*" is held by 37.8% of respondents who believe that it neither applies nor does not apply to their institution. From these results, it is evident that higher education institutions employ all four models of public relations, with the *press agency model*, based on one-way communication, being the most frequently practiced. This model is most applied through techniques of institution promotion, creating a positive image, preventing/neutering negative publicity, and generating publicity for the institution. Additionally, when the distribution results for each model are individually matched with the results of the arithmetic mean (Table 2), it is evident that the *press agency model* is the most used model of public relations in higher education institutions. Furthermore, the average score of items (X) related to the *public information model* indicates that it is the second most used model of public relations (Table 2). Therefore, based on the results verified by descriptive statistical tools, hypothesis **H1** - *Croatian higher education institutions use outdated models of public relations (press agency model and public information model) is confirmed.*

Models of Public Relations	Mean value
The Press Agency Model	3,93
The Public Information Model	3,57
Two-Way Asymmetric Model	2,93
Two-Way Symmetric Model	2,78

Table 2: Overall mean value of the public relations model

Hypothesis testing for H2 and H3 was verified using both descriptive and inferential statistical tools. To test hypothesis H3, a combined table analysis (*Crosstabulation*) and non-parametric chi-square test of independence were conducted. The combined table analysis showed that most higher education institutions (64.3% mostly and 35.7% completely) perceive the role of public relations through the activity of institution promotion characterized by the one-way press agency model. This press agency model activity is practiced by both universities (84.6%) and colleges (77.8%), however, 11.1% of respondents employed at colleges believe that this statement does not apply to their institution at all. The results of the chi-square test ($\chi^2 = 13.243$ df = 6, $p < 0.05$) indicate a significant level of significance in the selection of public relations models based on the type of higher education institution. In other words, hypothesis **H3** – *there is a statistically significant difference in universities, colleges, and higher education institutions (public and private) only in the selection of the press agency model manifested through institution promotion technique is partially confirmed.* Testing hypothesis H2 using the non-parametric chi-square test of independence revealed that there is no statistically significant difference in the selection of public relations models in public and private higher education institutions. Furthermore, the results of the Pearson's chi-square test for each model separately are as follows: 1) *press agency model* (V1: $p = 0.520 > 0.05$; V2: $p = 0.360 > 0.05$; V3: $p = 0.353 > 0.05$; V4: $p = 0.219 > 0.05$), 2) *public information model* (V5: $p = 0.149 > 0.05$; V6: $p = 0.300 > 0.05$; V7: $p = 0.825 > 0.05$; V8: $p = 0.544 > 0.05$), 3) *two-way asymmetric model* (V9: $p = 0.552 > 0.05$; V10: $p = 0.629 > 0.05$; V11: $p = 0.106 > 0.05$; V12: $p = 0.194 > 0.05$), 4) *two-way symmetric model* (V13: $p = 0.165 > 0.05$; V14: $p = 0.507 > 0.05$; V15: $p = 0.371 > 0.05$; V16: $p = 0.561 > 0.05$).

Therefore, according to the above, hypothesis **H2** – *there is a statistically significant difference in the selection of public relations models in public and private higher education institutions* **is not confirmed**.

3.1.2. Roles of Public Relations In Higher Education

Respondents were asked to select multiple responses to the question of which of the listed public relations roles best describes the position of individuals responsible for public relations at higher education institutions, and these responses were analyzed using the *Multiple response* procedure (Table 3). From the total number of responses, it is evident that most respondents (52.5%) believe that the role of *technician* best describes the position of individuals responsible for public relations at higher education institutions. Additionally, Table 3 shows an equal percentage of respondents (23.7%) who believe that the roles of *manager* and *mediator* best describe the position of responsible individuals for public relations. These results indicate that most respondents have an operational role, i.e., they focus on implementing public relations programs but are not involved in research, evaluation, and strategic planning of public relations. Primarily, they are engaged in writing, producing communication materials, and media relations. They are not involved in decision-making within the institution. The role of the manager explains the greater involvement of respondents in strategic planning and management of public relations programs. They make decisions about communication policies and oversee their implementation. On the other hand, the mediator acts as a mediator or facilitator between the institution's administration and the public (all key stakeholders on which the institution depends) to achieve mutually acceptable solutions for both parties.

		Responses		% of responses
		N	percentage	
Roles of persons responsible for PR	technician	31	52,5 %	68,9 %
	manager	14	23,7 %	31,1 %
	mediator	14	23,7 %	31,1 %
Total		59	100,0 %	131,1 %

Table 3: Roles of persons responsible for public relations at higher education institutions

3.1.3. Characteristics of Public Relations Services at Higher Education Institutions

In addition to the original models of public relations, which are the subject of the research, this study aimed to investigate the actual state of public relations services at universities, colleges, and higher education institutions. Accordingly, the questionnaire included questions related to the number of employees with formal knowledge of PR employed in PR departments, the position and gender of individuals responsible for PR, the structure of PR departments, the size of the department, familiarity with research methods, knowledge and experience in crisis management, the involvement of PR departments in strategic decision-making within the institution, and the number of resources available for work. Like the previous data, indicators of PR department characteristics were processed through descriptive statistical analysis. Regarding the size of PR departments, the research showed that most higher education institutions (64.4%) fall into the category where there is neither a department nor an individual exclusively responsible for PR, with these activities being carried out by employees in other positions. Accordingly, 24.4% of institutions fall into the category of having up to two employees, and 11.1% fall into the category of having 3 to 5 employees. Considering the results, it's not surprising that no higher education institution falls into the category of having 6-10, or more than 10 employees in PR departments.

Regarding the question about the formal education of employees in PR departments, respondents were given five options: *all, more than 50%, half, less than 50%, and none*. Interestingly, most respondents (44.4%) believe that none of the employees in PR departments have academic education in PR. In the category where less than 50% of employees in PR departments have formal education in that field, 22.2% of employees belong, while the least (6.7%) are in the category where half of the employees have formal education. Additionally, 13.3% of respondents stated that all employees in PR departments have academic education in that field, as well as 13.3% for the category where more than 50% of employees do. Furthermore, the research results on the organization or structure of PR departments showed that most higher education institutions, 55.6% (25) do not have a formally structured PR department, 24.4 % (11) identified it as an independent unit or department established within higher education institutions, and 20% (9) as a unit established within another department. To detect data on the positions and job categories of individuals responsible for PR, respondents were offered the following responses: *office or PR department manager, PR specialist/officer/clerk, spokesperson, and not systematized*. Within this question, respondents could choose multiple provided answers, which were analyzed using the *Multiple Response* procedure. Out of the total of 59 assigned responses, 27 (45.8%) related to the category where there are no systematized positions for that area. Additionally, 23.7% of responses related to the category of PR specialist/officer/clerk, 20.3% to the category of office or PR department manager, and 10.2% to the spokesperson category. In terms of the gender structure of PR department managers at universities, colleges, and higher education institutions, an alarming finding is that almost half of the respondents (48.9%) stated that the position of PR department manager does not exist in their institutions. Furthermore, the results show that the proportion of women (33.3%) in managerial positions in PR is higher compared to men (17.8%), confirming the widespread assumption that women dominate PR. When asked who determines the PR strategy at higher education institutions, respondents were offered five answers: *administration/rectorate, and PR staff only implement it, administration/rectorate with prior consultation with PR staff, PR staff, with prior approval of administration/rectorate, only PR staff, and no strategy is formulated*. For most higher education institutions (33.3%), the PR strategy is determined by the administration or rectorate, and the PR staff merely implements it. Twenty percent of respondents stated that the PR strategy is formulated by the PR staff, with prior approval from the administration/rectorate. Additionally, 20% of respondents mentioned that the PR strategy is determined by the administration/rectorate with prior consultation with the PR staff. These results indicate a noteworthy finding. Namely, 26.7% of higher education institutions do not formulate a PR strategy, implicitly suggesting that PR activities are not planned in the long term but rather conducted tactically, without a strategy. Moreover, none of the respondents stated that the PR strategy is exclusively determined by the PR staff. Finally, the last question in the questionnaire regarding the characteristics of the PR department contained statements covered by a standard 5-point Likert scale: from (1) strongly disagree to (5) strongly agree. According to basic descriptive indicators, most respondents, 53.4% (17.8% agree and 35.6% strongly agree), agreed that the PR departments in their institutions have enough highly educated employees. Additionally, the results of the two highest ratings (4 - agree and 5 - strongly agree) show that half of the respondents, or 51.2%, believe that PR department employees have sufficient knowledge of research methods, while only 13.3% of respondents believe that this statement mostly does not apply to their institution. The results of the two lowest ratings (1 - strongly disagree and 2 - disagree) show that 37.7% of respondents believe that the statement "*the PR department has sufficient resources for work (time, staff, budget)*" does not apply to their institution and 44,5 % respondents (26.7% agree and 17.8% strongly agree) agree with the statement "*that the department has enough knowledge and experience to effectively manage crisis situations*", while 37.8% neither agree nor disagree with this

statement. Furthermore, 37.8% of respondents believe that the statement "*the PR department is involved in making all communication decisions*" applies to their institution, but 31.1% of respondents (11.1% strongly disagree and 20% mostly disagree) believe that it does not apply to their institution. The average score of the PR department characteristics particles (X) is mediocre, at 3.28. The highest arithmetic mean score ($X = 3.60$) pertains to the variable "*the department has a sufficient number of highly educated employees*" (V25). The Cronbach's alpha coefficient of internal consistency of the measured variables exceeds 0.7, indicating reliability.

4. CONCLUSION

This study aimed to explore and describe the models (practices) and roles of public relations within the Croatian higher education system, an area that is almost theoretically and practically underdeveloped. The results of the descriptive statistics indicated that although higher education institutions in Croatia utilize all four models of public relations, they more frequently employ one-way models, specifically the press agency model and the public information model. The press agency model is primarily practiced through techniques such as promoting the institution, creating a positive image, preventing/neutralizing negative perceptions, and generating publicity for the institution. The public information model is applied through the one-way dissemination of information about the institution's operations, more so than promoting the institution or mediating between the institution's administration and its public. The research results indicate that higher education institutions have yet to fully recognize the advantages of two-way interaction with key publics, and two-way symmetrical communication, which fosters quality relationships with all segments of the public, is not optimally utilized. Furthermore, it is justifiable to conclude that public relations models in higher education institutions are not sufficiently developed, as most respondents indicated they do not have formal education in public relations, and thus lack the adequate knowledge and competencies required for the application of sophisticated two-way public relations models. The tasks and activities of public relations staff in higher education institutions are largely confined to a technical (operational) role focused on implementing public relations programs. This means that staff are not involved in research, evaluation, and strategic planning of public relations. Moreover, one of the most crucial pieces of information that indicates the real capabilities and opportunities of public relations staff is their ability to influence the adoption and creation of public relations strategies. In most higher education institutions, the public relations strategy is exclusively determined by the administration or rectorate, with public relations staff merely executing it. Adding to this, the fact that none of the respondents indicated that the public relations strategy is determined exclusively by public relations staff, it can be concluded that in most higher education institutions, the person or department coordinating public relations activities has no real influence on strategic decisions in this field. It is also concerning that some higher education institutions do not formulate a communication strategy, which implicitly suggests that public relations are not strategically positioned but are managed reactively and tactically, without a strategy. The research results regarding the characteristics of public relations departments indicate that their presence in higher education institutions is insufficient, as most institutions do not have a professionally structured and organized public relations department. In these institutions, there is no individual exclusively dedicated to public relations; rather, these duties are handled "incidentally" by employees in other roles (mostly teaching staff). Public relations have yet to be fully established as a separate field within the higher education system. This practice of public relations somewhat lags behind the standards in Western countries where public relations are recognized as a significant strategic resource.

Higher education institutions that recognize all the advantages of two-way models and leverage the potential of the public relations department are essential for maintaining a successful image and are a crucial segment for the survival of higher education institutions in a modern competitive environment.

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EXPLORING THE EFFECTIVE MECHANISMS TO OVERCOME OBSTACLES IN THE TRANSFER OF KNOWLEDGE BETWEEN UNIVERSITIES AND INDUSTRY

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ABSTRACT

This article discusses the mechanisms and difficulties related to the successful transfer of knowledge from universities to industry. By conducting a systematic review of existing literature and empirical case studies, it identifies many crucial aspects that contribute to the successful transfer of knowledge. These factors include both official and informal channels, social capital, and strategic frameworks. The article highlights the major enabling determinants that make the flow of information between entities effective, as evidenced by existing case studies and empirical literature. The findings indicate that to increase the development of networks and overcome barriers in the collaboration process, there needs to be the development of trust, communication, and institutional support. It identifies ways to improve university-industry relations to enhance innovation and economic growth.

Keywords: *Knowledge transfer, university-industry collaboration, innovation, technology transfer, commercialization*

1. INTRODUCTION

University to industry knowledge transfer is a vital process in the modern innovation ecosystem. It enables the exchange of scientific and technical knowledge from academic institutions to commercial companies. This process promotes innovation, competitiveness, and economic growth. Nevertheless, the process is hindered by cultural disparities, communication obstacles, and challenges connected with intellectual property management. Universities typically concentrate on long-term research objectives, whereas companies are driven by the necessity for rapid development cycles to achieve commercial success. Efficient communication is essential if trust is to develop among the parties and to enable the transfer of know-how to continue without hitches. One such critical issue that creates barriers to cooperation is the administration of intellectual property. Universities must respond to the social and economic needs of their environment. Their mission has been typically limited to researching and teaching. Now, they must adequately incorporate a “third” mission or dimension: contribute to the regions’ economic growth in which they are placed, through the knowledge transfer (KT) and social engagement. Currently, the Triple Helix of university–industry–government relations provides surroundings and frameworks for different organizations to overcome blockages to innovation in regional innovation systems (Rantala et. at. 2021). Recent relevant reviews have shown that a three-party relationship (University, Industry and Government) becomes comprehensive. (Dip 2021). Knowledge transfers have been facilitated by legal channels such as patents, licensing, spin-off firms, and research contracts, as well as through personal networks and unofficial interactions. “Valuable” university-industry links are affected by the characteristics and consistency of the firm knowledge base (Giuliani&Arza, 2009). Intermediary organizations such as TTOs and innovation centers serve as intermediaries between academics and industry. They assist in overcoming challenges related to intellectual property administration, company growth, and securing funding. This article provides a comprehensive analysis of the methods and techniques that can be used to effectively overcome the barriers that now limit the transfer of research information from universities to companies.

The discussion will benefit from successful case studies across various industries, offering valuable perspectives on knowledge transfer processes and the substantial benefits of aligning objectives, fostering effective communication, advocating robust intellectual property policies, and engaging intermediary supporters.

2. METHODOLOGY

This article uses a systematic analysis of existing literature together with practical case studies to investigate the successful procedures and obstacles involved in the exchange of knowledge between academia and industry. The literature review consolidates data from pertinent articles, while the case studies offer pragmatic insights into the functioning of such mechanisms in real-sector contexts. A thorough search of databases such as Scopus and Web of Science was conducted to find relevant articles published between 2000 and 2023. The search criteria used were "knowledge transfer", "university-industry collaboration", "technology transfer" and "commercialization". All articles were chosen based on their relevance and impact on the subject matter. The paper also presents case examples from different sectors (biotechnology, computer technology, engineering, and social sciences) to provide alternate perspectives on techniques for transferring information. The data obtained from the literature review and case studies were subjected to theme analysis. The identification of key themes and patterns is crucial for comprehending the mechanisms and challenges involved in knowledge transfer. The results were subsequently combined to create a comprehensive framework for efficient knowledge transfer.

3. KNOWLEDGE TRANSFER AND EFFECTIVE MECHANISMS

Knowledge transfer will remain a critical aspect of bridging what appears to be a gap between academic research and practical implementation. Universities produce enormous quantities of knowledge, which the industry can apply to create innovative products and processes as well as services. Collaborative relationships in the form of knowledge transfers between higher education institutions and communities are highly beneficial (Firdaus et. at. 2020). The literature emphasizes the importance of knowledge characteristics such as level of codification, appropriability, and universality in shaping the knowledge development and transfer processes (Fabiano et. at. 2020). It is argued that efficient knowledge transfer can lead to technical progress, strength of competitiveness, and economic growth. U–I cooperation has attracted the attention of the governments countries because it enables economic development. (Figueiredo & Ferreira, 2021).The literature analysis identifies several mechanisms that facilitate knowledge transfer between universities and industry.

3.1. Formal channels

Formal channels include patents, licenses, spin-off companies, and research contracts that represent formal methods of knowledge transfer. The aforementioned mechanisms provide legal and financial frameworks whose purpose is to support and facilitate the commercialization of academic research. The role of legal and financial frameworks is particularly visible in the establishment of official partnerships. Effective knowledge transfer in bioscience relies significantly on the establishment of strong university-industry partnerships, characterized by shared objectives and well-defined expectations from the very beginning. Patents and licenses are crucial for protecting intellectual property and facilitating the commercialization of academic research. Notable examples involve biotechnology patents that have resulted in the development of innovative medical therapies. Patents are not simply exclusive rights granted for an invention but also are assets that can be monetised in the markets through commercialisation including patent license and assignment. And the university technology transfer is in the form of patent commercialisation at market prices (Zhao & Cui, 2022).

Furthermore, it is crucial to highlight the significance of university spin-offs. University spin-offs are companies created exclusively for the purpose of commercializing research conducted at universities. These companies frequently require support from incubators and accelerators to successfully navigate the initial phases of their development. Spin-off firms offer a direct pathway for the commercialization of new technology created within an academic environment.

3.2. Informal channels

Informal channels include personal networks informal meetings and conferences. The aforementioned informal channels facilitate the exchange of tacit knowledge. Emerging themes such as knowledge-spillover or absorptive-capacity appear, which are related to the research sensitivity on the true use of the knowledge generated (Heras-Rosas & Herrera, 2021). Informal channels are formed in a way that encourages the upgrading of formal mechanisms fostering trust and mutual understanding both among existing and potential partners. These platforms support researchers and professionals to engage in discussions about recent findings and explore possible collaborations. Furthermore these events support the development of professional connections and improve understanding of industry requirements. The majority of knowledge transfers from universities to new firms occur through informal social relations between faculty and students and among students (Barbini et. at. 2020). Informal interactions such as conferences and personal networks play a vital role in the sharing of tacit knowledge establishing trust and enabling dynamic collaboration.

3.3. Intermediaries

Technology Transfer Offices (TTO) and incubators. The function of intermediaries is to act as mediators between the academic community and industry. By providing support in areas such as intellectual property management, business development, and funding, they play a leading role in bridging the gap between academia and industry. Technology Transfer Offices also help in identifying potential industry partners and managing collaborations. TTOs and innovation hubs play a crucial role in facilitating the commercialization process by providing vital services such patent filing, licensing, and business development support. Innovation hubs and science parks are physical locations that facilitate collaboration and exchange between academic and industry groups. They provide shared resources and generate a pro-innovative environment. In addition, they offer supportive services such as networking and other services that enhance the effectiveness of knowledge transfer.

3.4. Challenges in knowledge transfer

There are a number of barriers that negatively affect the effective transfer of knowledge between the university and industry. Cultural differences are one of the main barriers to knowledge transfer between the university and industry. Universities and industries, as a rule, have different strategies for achieving goals, various ultimate goals, predicted time intervals, and succession systems of success. The priorities of academic research are related to long-term projects and expanding knowledge, while industrial research is focused, in most cases, on short-term product development and profitability. These differences can cause misunderstandings and conflicts among partners. Several hurdles exist in university-industry collaborations: their needs and capabilities, organisational and individual background as well as learning modes related to innovation are quite different (Leloux 2019). The research shows that these tensions are a natural part of the network existence and often advantageous to knowledge creation (Dooley & Gubbins, 2019). In addition to cultural differences, a special type of barrier to the effectiveness of knowledge transmission between the university and industry is the communication barrier. Effective communication is crucial for successful knowledge transfer between the university and industry.

However, differences in language and terminology between the Academy and the industry may cause substantial obstacles and obstruct collaboration. Our findings show that lack of information about UIC opportunities as well as lack of financial support for UICs are the most relevant barriers that inhibit firms' usage of UICs for innovation (Kleiner-Schaefer & Schaefer, 2022). Effective solutions for overcoming these challenges include scheduling regular meetings, implementing clear communication procedures, and providing collaborative training sessions. The next barrier that has a negative effect on the transfer of knowledge is the management of intellectual property (IP). IP management is a significant challenge in cooperation between the university and industry. Open questions and disagreement over IP ownership, as well as around the division of income, can create conflicts and prevent the progress of joint projects. Clear policies and agreements are key to defining positions and insurance benefits from cooperation for all parties involved. Clear and fair IP policies are key factors to resolving conflicts and ensuring mutual benefits in cooperation in the university industry.

4. RECOMMENDATIONS

Based on the analysis, the findings indicate that there must be the development of trust, communication, and institutional support to increase the development of networks and overcome obstacles in the process of cooperation. This chapter contains recommendations for improving effective mechanisms to overcome obstacles in the transfer of knowledge between universities and industry.

4.1. Improvement of communication

Establishing regular communication channels and protocols among participants ensures clarity and transparency. Organizing joint workshops and training increases the likelihood of overtaking the communication gap and increases the level of mutual understanding. A positive example of an effective mechanism for improving communication by establishing regular communication channels and protocols can be reflected in the creation of a common digital platform for project management and communication. The aforementioned platform, among other things, simplifies interaction and increases the level of mutual control.

4.2. Aligning deadlines and goals

Develop cooperation frameworks that harmonize the goals and expectations of all involved participants, universities, and industry partners. Organizing joint strategic planning helps in the process of defining common interests as well as in creating a joint vision of cooperation. Aligning academic research goals with realistic industry needs can result in relevant outcomes.

4.3. Strengthen IP Policies

Ownership, usage rights, and revenue sharing are the main factors that influence the implementation of clear and fair IP policies. The aforementioned policies should be developed on the basis of open dialogue and mutual agreements. Regular analysis and updates of IP policies ensure relevance and efficiency throughout the entire cooperation development process.

4.4. Intermediaries

Use and exploit services offered by technology transfer offices, innovation hubs, and other intermediaries to facilitate knowledge transfers. Their primary purpose is to provide valuable support services, and they can greatly assist in the process of solving the complexities of collaboration between universities and industry.

Intermediaries can significantly improve the efficiency and effectiveness of knowledge transfer activities by engaging them in the earlier stages of the process.

4.5. Foster Informal Interactions

Encouraging informal interactions through networking processes, during conferences, and using collaboration platforms. Building personal relationships greatly contributes to increased trust and facilitates the process of exchanging tacit knowledge. For example, organizing informal meetings or social events could potentially strengthen links between academic researchers and practitioners from the real sector.

5. CONCLUSION

Effective transfer of knowledge between universities and industry is a key factor in stimulating innovation and, thus, economic growth. By investigating the characteristic mechanisms and numerous challenges in the process of knowledge transfer between universities and the real sector, this study provides valuable insights into the factors that influence the improvement of cooperation. Clear communication, aligned goals, strong intellectual property policies, the use of informal interactions, and the strategic use of intermediaries are key factors in successful knowledge transfer. The focus of future research should be on exploring innovative approaches to overcoming barriers and maximizing the potential of university-industry partnerships.

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THE IMPACT OF GENDER AND AGE ON PERCEIVED ETHICAL STANDARDS AND THE TRUTHFULNESS OF ONLINE INFORMATION

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ABSTRACT

The phenomenon of social media has undoubtedly transformed the landscape of internet and online information research, offering researchers and users widespread access to vast repositories of data and insights into human behavior and interactions. However, this digital revolution also brings forth a host of ethical considerations and challenges concerning the transparency and truthfulness of published online information, along with the influence of gender and age on these factors. This article delves into the impact of gender and age differences on the perception of ethical standards and the truthfulness of information disseminated on the internet. A meticulous statistical analysis of respondents was conducted and detailed in Croatia. This summary presents an overview of key issues, guidelines, and future directions in the realm of research on how gender and age differences among respondents influence the perception of ethical standards and the truthfulness of online information, along with the information disseminated through this medium.

Keywords: *ethical standards, code of ethics, truthfulness, online information, reliability*

1. INTRODUCTION

Ethical standards and their implementation are indispensable in business, daily life, and particularly in the digital realm, where social media usage is pervasive (Roša, 2021). The establishment of a code of ethics is imperative to mitigate the dissemination and consumption of false online information (Barrett-Maitland & Lynch, 2020). This raises the question of how individuals, varying by gender and age, perceive, comprehend, and interpret information in social and digital environments. Gender and age disparities can influence attitudes toward perceiving and comprehending ethical standards, codes, online information, and embracing technological advancements (Ruegger & King, 1992). Digital transformation is a multifaceted subject, often entailing ethical and moral concerns, especially regarding personal data protection. Research on ethics is vital for implementing digital strategies and attaining sustainable development and business objectives (Luo et al., 2022). In this context, individuals' morality, shaped by personal attitudes and values, plays a pivotal role in ethical decision-making (Eisele et al., 2024). Nonetheless, a robust strategy for adopting ethical standards and norms is crucial to ensure sound business decisions in the digital realm and the responsible use of online information, which significantly impacts society. The integration of structured ethics programs and standards in the digital business landscape, encompassing both the dissemination and utilization of online information, can enhance perception, ethical comprehension, and the resolution of ethical and moral dilemmas for users, irrespective of their gender and age.

2. LITERATURE REVIEW

2.1. The Importance of Ethical Standards of Online Information

Ethical standards in online information and interactive technologies wield profound influence over society, education, industry, and individual conduct. Upholding ethical standards is crucial for preserving the integrity, quality, and privacy of online information, underscoring the importance of further studies and research in this domain (Wijaya et al., 2022). This commitment to ethical norms ensures trustworthiness and reliability in digital communication and interactions. It can be argued that ethical standards in social media hinge on users' honesty, respect for the relevance of information and others' personal data, and refraining from unauthorized downloading of various materials, such as videos, ideas, and photos, posted by other users. However, the proliferation of fake news and misinformation has led to a decline in critical thinking among users who consume and propagate such content (Grigorescu & Baiasu, 2023), sometimes leading to breaches of ethical and legal regulations (Bôtošová et al., 2023). The interplay between the environment and personal, formal, and informal ethical codes plays a pivotal role in shaping ethical behavior (Scholl et al., 2016) and users' perceptions of privacy (Balapour et al., 2020). Establishing a code of ethics with clearly delineated steps and procedures for online information dissemination can sway users' decisions toward ethical conduct. When individuals deem an ethical issue significant, they draw upon personal values to assess ethical behavior. However, ethics is a multidimensional and intricate subject (Fan, 2005), where in external influences like social norms can impact behavior when the issue lacks perceived importance. Despite the transformative impact of digital technologies on media usage and information content creation (Mpinganjira & Maduku, 2019) in online reporting, ethical responsibilities encompass accuracy, credibility, privacy, and unbiased news-gathering methods to combat potentially skewed, inaccurate, and dubious information. The absence of a universally accepted code of ethics for online information poses a novel threat to the profession (Grigorescu & Baiasu, 2023). Media ethics, encompassing both traditional and digital forms, uphold values such as legality and reverence for life. Ethical research on online information delves into issues like censorship, privacy, and information accessibility. In essence, ethical standards are pivotal for upholding the authenticity, credibility, and responsible use of online information (Flanagin & Metzger, 2000). Ethical research on social media and the Internet, along with accessing online information, is indispensable for fostering integrity and credibility in searches, research endeavors, and the acquired online information while safeguarding the rights and dignity of participants. Adherence to regulatory and ethical standards is imperative for both users and creators of online information (Farombi & Klaus, 2024) to uphold accountability and trust in research and publication practices.

2.2. How gender and age can influence perceptions of truthfulness

In everyday life, individuals often confront the decision to act dishonestly, with their actions frequently bearing consequences for society and others (Capraro, 2017). However, not everyone opts for dishonest behavior. It's often simpler to choose the path of least resistance in a given situation. These actions prompt the question: How do people and users perceive, comprehend, and interpret information in social, digital, and online realms? Age and gender variances are presumed to exert a significant influence on decisions regarding information comprehension in general, and particularly on online information (Rahhal et al., 2002). Consequently, some studies suggest that women tend to assess truthfulness less favorably than men, while others propose the opposite view. Conversely, certain research doesn't emphasize gender and age disparities as crucial factors in understanding credibility and truthfulness. While there's a belief that men are more inclined to assess truthfulness than women, such a claim lacks absolute certainty and accuracy (Robinson et al., 1998).

Nevertheless, the gender and age of online information users can profoundly shape their comprehension and perception of truthfulness. This is primarily because men and women across different age groups exhibit significant variances in their attitudes towards comprehending online information, especially in embracing technological and network changes—innovation. Overall, gender and age are pivotal factors (Lin et al., 2017) in molding the perception of truthfulness and understanding of information on the Internet (Hargittai & Shafer, 2006).

2.3. The impact of gender and age on perceived ethical standards in online information

The influence of gender and age on perceived ethical standards in online information has been extensively explored and addressed in various scientific studies. While internet usage has been found to have a direct positive impact on the older population, particularly in terms of cognitive function, it is also associated with improved psychological well-being among older individuals. This includes enhanced self-perception of aging, reduced feelings of loneliness and depression, and a greater sense of control and social support (Wang et al., 2024). Significant differences between genders and generations exist, especially concerning attitudes towards ethics and ethical behavior (Lucas & Mason, 2008). It appears that gender and age play roles in the decision-making process regarding ethical matters (Pierce, 2014), particularly in the digital space and regarding online information, which users are increasingly sensitive to. While some findings suggest that gender may not have a substantial impact on all the aforementioned factors, indicating that other factors such as age should be further explored in future research (Mansoori et al., 2023), subsequent studies have highlighted the importance of age, gender, and education in defining the usage patterns of social networks, including the consumption of online information by active older users (Blažun Vošner et al., 2016). This underscores the significance of considering gender and age when examining ethical standards in online information.

2.4. Gender differences in perceived ethical standards and reliability of the online information

Ethical standards and practices are crucial for fostering positive outcomes such as commitment, trust, and sustained performance (Goel & Ramanathan, 2018). Gender stereotypes significantly influence ethical decision-making, as evidenced by studies examining the interconnectedness of different components of gender stereotypes. Research indicates that information about one aspect of stereotypes can influence others, underscoring the complexity of gender stereotypes (Schminke, 1997). Additionally, information about specific components can overshadow gender differences, highlighting the intricate nature of ethical decision-making and judgments (Branley-Bell et al., 2022), including perceptions of online information credibility and information ethics (Taddeo & Buchanan, 2015). Gender disparities are consequential and impact judgments of ethical behavior (Mutambik et al., 2021) and perceptions of ethicality (Amancio, 1993). Traditional gender roles and stereotypes can shape ethical perceptions and judgments, underscoring the importance of understanding gender stereotypes in ethical decision-making (Schminke, 1997). Women tend to perceive certain practices as unethical more frequently than men. Some researchers suggest that women possess greater ethical sensitivity and perceive situations differently than men (Schminke et al., 2003). Although gender is believed to correlate with credibility and ethical perception (Robinson et al., 1998), both genders play significant roles in ethical decision-making. However, gender differences in ethical decision-making exist (De Zoysa, 2016). While individuals typically consider moral issues through the lens of individual rights, women often incorporate emotions of compassion and care into their ethical considerations. A combination of these perspectives can yield more creative solutions with long-term societal benefits (Dan et al., 2024).

Females are generally perceived as more trustworthy than males (Breuer et al., 2023), and in the context of online information, women tend to exhibit higher ethical perceptions compared to men (Shtudiner & Klein, 2020). However, research on this topic has produced diverse findings, with some studies suggesting that women behave more ethically than men while others find no significant gender differences (Loo, 2003). Gender differences in ethical orientation and decision-making are influenced by various factors, such as age and professional experience (Alotaibi & Alshehri, 2020). While women typically achieve more significant ethical outcomes than men (Carbone et al., 2024), this trend may vary. Theories such as problem-based moral intensity model theory and social role theory offer insights into gender differences in ethical decision-making and behavior across different contexts. However, despite numerous studies, the extent of gender differences in ethical decision-making remains inconclusive (Dalton & Ortegren, 2011). Creating a gender-equal environment where both females and males have the opportunity to communicate is essential (Blažun Vošner et al., 2016). However, differences in behavior, influenced by social indicators such as individual differences and gender, may be more pronounced in online environments, where users often become representatives of these social categories. Gender differences play a crucial role in the acceptance and usage of information technologies. Social media platforms, relying on digital and computer-supported communication, serve as tools for consuming, co-creating, sharing, and altering content—online information—generated by users. Studies indicate that a higher percentage of women are familiar with online social networks and are more frequent users of online information compared to men (Blažun Vošner et al., 2016). Regarding the reliability of online information, technological advancements have facilitated easy access to digital content. Gender, one of the most frequently studied variables in ethics literature, is associated with the perception of online information credibility, with studies suggesting that women, as users, exhibit higher ethical orientations (Dalton & Ortegren, 2011). However, discussions on the reliability of online information also encompass specific criteria within the domain of the information itself. The reliability of information depends on available evidence and the extent to which evidence supports or corroborates the information. Improving the reliability and trustworthiness of online information entails fostering the online presence of authoritative institutions that confirm credibility (Vedder & Wachbroit, 2003). While studies have yet to definitively establish that gender differences influence the acceptance of online information as reliable or unreliable, further research could shed light on additional questions related to ethics, gender, and the reliability of online information.

2.5. Age differences in perceived ethical standards and reliability of the online information

Age, along with gender, can significantly influence the perception of ethical standards and online information credibility on social media platforms and networks. Regarding age disparities, studies have shown a negative correlation between age and internet usage effectiveness, as well as the perceived quality of online information (Chung et al., 2010). However, the moderating role of age in this field of research remains inconclusive, with some suggesting negligible age differences (Rahhal et al., 2002). Notably, the relationships between perceived ease of use, usefulness, and online community activities do not vary significantly with age (Chung et al., 2010). Understanding how age impacts perceived ethical standards and online information credibility is crucial for upholding transparency and reliability in online communication and research (Blažun Vošner et al., 2016). Younger and older individuals often hold divergent views on online communication privacy, with regulators addressing concerns through regulations and educational efforts aimed at equipping young people with the necessary tools to navigate privacy and credibility issues online (Steeves & Regan, 2014). Older adults increasingly view digital platforms as valuable tools for communication, enabling interactions with family and friends and facilitating knowledge exchange with like-minded individuals,

ultimately enhancing their quality of life (Blažun Vošner et al., 2016). However, older adults may be particularly susceptible to misinformation due to cognitive declines, though accumulated knowledge and experience help mitigate these risks. Social changes in late adulthood, such as reduced lie detection ability and increased trust, also contribute to susceptibility to misinformation, exacerbated by challenges in recognizing sponsored content or manipulated images on social media platforms (Brashier & Schacter, 2020). Despite initial technological apprehension, older adults gradually embrace digital platforms and online information consumption after overcoming negative attitudes (Frishammar et al., 2023). Every media-covered topic raises ethical considerations regarding information use, emphasizing the right to access credible information irrespective of age, ethics, gender, or socioeconomic status (Flanagin et al., 2000). Trust in online platforms and social media underscores the importance of safeguarding sensitive information while reevaluating ethical and legal issues (Schmidt et al., 2021). Upholding ethical truthfulness standards in research and strategic endeavours is essential for fostering objectivity and integrity in online information dissemination. Compliance with ethical norms fosters integrity across various domains and enhances trust in published online information (Enofe et al., 2014). Given the multidimensional nature of this topic, including power dynamics and increased vulnerability in the digital realm (Portes et al., 2020), further research is needed to explore the ethical implications of online information dissemination, potentially considering additional individual-level characteristics (Ceravolo et al., 2021).

2.6. Moral values in digital business practices

Digital transformation is a multifaceted topic that is extensively studied across various levels. When discussing ethics and ethical considerations in digital business, the protection of personal data typically takes precedence. However, further research is necessary to explore ethics in conjunction with the implementation of a company's digital strategy, aiming to ensure a positive impact of digital transformation. Research on ethical and moral issues in the context of digitization holds significant importance, especially in light of the sustainable development goals set forth by the United Nations and the European Union. To gain a better understanding of the opportunities and challenges faced by companies, additional research, and comprehension of ethics in the context of digitization are required, given the rapidly evolving digital landscape. Adhering to ethical standards and moral values when making business decisions in a digital environment enables companies to pursue long-term sustainable development goals (Rosha, 2021). The significance of ethics and morality in socially responsible digital business is underscored by the expectation that companies operate profitably while upholding ethical codes and moral values. Morality is inherently understood as the standards, beliefs, and principles that shape individuals' notions of right and wrong. The specific criteria influencing moral judgments are subject to ongoing debate (Eisele et al., 2024). Personal perspectives and values form the basis for addressing moral concerns. The dynamic nature of the digital environment, digital practices, platforms, and technologies amplifies the reach and impact of corporate communications (Hagelstein et al., 2021), yet it also often exposes potential moral vulnerabilities, challenges, and dilemmas. Business accountability frameworks necessitate the strategic adoption of ethical standards and norms with clear guidelines in digital business and communication realms (Tóth & Blut, 2024), particularly for decisions with significant social implications (Ciulli & Kolk, 2023). Further in-depth research is required in this specific domain of morality and ethics in digital businesses (Culham et al., 2024), while concurrently, educational courses and structured ethics programs prove beneficial as they contribute to the cultivation of ethical understanding (Hagelstein et al., 2021).

3. METHODOLOGY

This research used an online questionnaire on the Google Forms platform, administered during March and April 2022 in Croatia. Primary data were collected through this survey, and the analysis of this data underpins the conclusions presented later. The initial section of the questionnaire collected socio-demographic information about the participants. The remaining closed-ended questions examined respondents' attitudes toward the importance of ethics in digital business. A total of 207 respondents completed the anonymous questionnaire online via Google Forms. The research questions in this study aimed to examine respondents' attitudes and perceptions concerning the truthfulness of online information, with particular attention to gender and age group differences and potential correlations between various perceptions. The specific research questions were as follows:

- 1) Do you think the information published on the Internet and social networks is true?
- 2) Do you think information published on the Internet is less ethical compared to information published through traditional channels (TV, radio, newspapers)?
- 3) Do you think corporations and employees in the digital environment and business adhere to established moral values?

The possible answers to these questions were: 1 - Agree, 2 - Neither agree nor disagree, and 3 - Disagree.

Variables were subsequently formed based on each of these questions:

- 1) Perceived truthfulness of Online information
- 2) Ethical standards of Online information
- 3) Moral values in Digital business practices

The study developed six hypotheses to investigate the relationship between gender and age groups in exploring the perception of the truthfulness of information on online platforms. These hypotheses are grounded in a review of the existing academic literature and are as follows:

- H1. Female respondents perceive the truthfulness of online information to be higher than male respondents.
- H2. Older respondents have a higher perception of the truthfulness of online information compared to younger respondents.
- H3. Women perceive the ethical standards of online information to be lower than those of information published through traditional channels.
- H4. Older respondents are more likely to find online information less ethical compared to information published through traditional channels, in contrast to younger respondents.
- H5. Men find that moral values in digital business practices are lower compared to women.
- H6. Older respondents believe more strongly that moral values in digital business practices are adhered to, compared to younger respondents.

The collected data were analysed using a T-test to determine any statistically significant differences in attitudes between male and female respondents. Differences between variables among age groups were assessed using ANOVA.

4. RESULTS

The results of the statistical testing using SPSS software are presented below. The first question in the socio-demographic section of the questionnaire allowed respondents to choose their gender as either female or male, with an additional option of "I don't want to answer". There were 128 female respondents and 79 male respondents. The questions tested the hypothesis related to the respondents' perception of the truthfulness of information on online platforms using three variables presented previously: *Perceived truthfulness of Online information*,

Ethical standards of Online information, and Moral values in Digital business practices. Each question provided three response levels on the Likert scale: 1 (disagree), 2 (neither agree nor disagree), and 3 (agree). Three of the hypotheses were evaluated using a T-test to determine whether there were differences between the gender groups' perceptions for each variable.

Table 1. Descriptive results for the variables Perceived truthfulness of Online information, Ethical standards of Online information, and Moral values in Digital business practices according to Gender

Questions	Gender	N	Mean	Std. Deviation	Std. Error Mean
Do you think the information published on the Internet and social networks is true?	Female	128	1.8281	.72209	.06382
	Male	79	1.5190	.52771	.05937
Do you think information published on the Internet is less ethical compared to information published through traditional channels (TV, radio, newspapers)?	Female	128	1.6563	.83654	.07394
	Male	79	1.6962	.70446	.07926
Do you think corporations and employees in the digital environment and business adhere to established moral values?	Female	128	1.9297	.79550	.07031
	Male	79	1.5696	.54734	.06158

Source: authors' work

The descriptive data shows the following results: mean values of the three examined variables – Perceived Truthfulness of Online Information, Ethical Standards of Online Information, and Moral Values in Digital Business Practices – across gender groups fall within the more disagreeing range of 1.52 to 1.93. Particularly, women exhibit higher mean values than men for two out of the three variables – Perceived Truthfulness of Online Information and Moral Values in Digital Business Practices. For Ethical Standards of Online Information, men have a slightly higher mean.

Table following on the next page

Table 2. T-test for variables Perceived truthfulness of Online information, Ethical standards of Online information, and Moral values in Digital business practices according to Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Do you think the information published on the Internet and social networks is true?	Equal variances assumed	3.142	0.078	3.299	205	0.001	0.001	0.30914	0.09371	0.12438	0.49390
	Equal variances not assumed			3.546	199.121	0.000	0.000	0.30914	0.08717	0.13724	0.48103
Do you think information published on the Internet is less ethical compared to information published through traditional channels (TV, radio, newspapers)?	Equal variances assumed	8.464	0.004	-0.354	205	0.362	0.724	-0.03995	0.11287	-0.26249	0.18259
	Equal variances not assumed			-0.369	186.220	0.356	0.713	-0.03995	0.10839	-0.25379	0.17388
Do you think corporations and employees in the digital environment and business adhere to established moral values?	Equal variances assumed	6.533	0.011	3.538	205	0.000	0.000	0.36007	0.10178	0.15940	0.56073
	Equal variances not assumed			3.852	202.532	0.000	0.000	0.36007	0.09347	0.17578	0.54436

Source: authors' work

An independent-sample t-test was performed to compare the levels of Perceived Truthfulness of Online Information between male and female respondents. The results indicated a statistically significant difference, with females ($M=1.8281$, $SD=0.72209$) scoring higher than males ($M=1.5190$, $SD= 0.52771$); $t(205)=3.299$, $p=0.001$. Furthermore, the independent-samples t-test revealed that there was no statistically significant difference in the scores for Ethical Standards of Online Information between male and female respondents, $t(205)= -0.354$, $p=0.362$. Lastly, for the variable Moral Values in Digital Business Practices, the analysis revealed a statistically significant difference in the scores for females ($M=1.9297$, $SD=0.79550$) and males ($M=1.5696$, $SD= 0.54734$), where females had higher scores; $t(205)=3.538$, $p=0.000$. These results provide support for H1 and H5, leading to the acceptance of those hypotheses. For the H1, the independent-sample t-test revealed a statistically significant difference in the levels of perceived truthfulness of online information between male and female respondents. Specifically, female respondents scored higher than male respondents in perceiving online information to be truthful. For the H5, data showed that women had higher mean values than men for the variable Moral Values in Digital Business Practices, showing that women perceive ethical standards in digital business practices to be higher. On the other hand, the descriptive data did not support H5 hypothesis, as there was no significant difference in the mean values between men and women for the variable Ethical standards of Online information. Furthermore, the socio-demographic section included a question about the age of the respondents. The responses were categorized into the following age groups: less than 30 years old, 31 to 40 years old, 41 to 50 years old, and 51 or more years old. The number of respondents in each group, respectively, was 44, 50, 67, and 46. These age groups were then compared concerning the three previously mentioned variables – Perceived Truthfulness of Online Information, Ethical Standards of Online Information, and Moral Values in Digital Business Practices. ANOVA was used to determine differences between the age groups' perceptions of each variable in the remaining three hypotheses.

Table 3. Descriptive results for the variables Perceived truthfulness of Online information, Ethical standards of Online information, and Moral values in Digital business practices according to Age groups

		N	Mean	Std. Deviation	Std. Error
Do you think the information published on the Internet and social networks is true?	less than 30	44	1.5455	0.58883	0.08877
	31 to 40	50	1.5200	0.61412	0.08685
	41 to 50	67	1.7164	0.66983	0.08183
	51 or more	46	2.0652	0.67994	0.10025
	Total	207	1.7101	0.67049	0.04660
Do you think information published on the Internet is less ethical compared to information published through traditional channels (TV, radio, newspapers)?	less than 30	44	1.5455	0.66313	0.09997
	31 to 40	50	1.6600	0.82338	0.11644
	41 to 50	67	1.6716	0.82367	0.10063
	51 or more	46	1.8043	0.80608	0.11885
	Total	207	1.6715	0.78722	0.05472
Do you think corporations and employees in the digital environment and business adhere to established moral values?	less than 30	44	1.5682	0.62497	0.09422
	31 to 40	50	1.7000	0.64681	0.09147
	41 to 50	67	1.8209	0.73702	0.09004
	51 or more	46	2.0652	0.82737	0.12199
	Total	207	1.7923	0.73096	0.05081

Source: authors' work

In general, for all three variables, the higher the age, the higher the mean. This indicates that the perceived truthfulness of online information is higher among older respondents. When conducting a one-way ANOVA, tests of homogeneity of variances showed no statistically significant differences between the groups, indicating that the population variances are equal: $F(3, 203)=0.732$, $p=0.534$; $F(3, 203)=1.924$, $p=0.127$; $F(3, 203)=1.262$, $p=0.289$. Since these results violate the assumption of homogeneity of variances required for an ANOVA, a robust alternative was employed. Therefore, a Welch ANOVA was conducted instead to examine overall differences between the groups, followed by a Games-Howell test to identify specific group differences.

Table following on the next page

Table 4. Welch ANOVA for the variables Perceived truthfulness of Online information, Ethical standards of Online information, and Moral values in Digital business practices according to Age groups

		Sum of Squares	df	Mean Square	F	Sig.
Do you think the information published on the Internet and social networks is true?	Between Groups	8.803	3	2.934	7.108	0.000
	Within Groups	83.805	203	0.413		
	Total	92.609	206			
Do you think information published on the Internet is less ethical compared to information published through traditional channels (TV, radio, newspapers)?	Between Groups	1.517	3	0.506	0.814	0.487
	Within Groups	126.144	203	0.621		
	Total	127.662	206			
Do you think corporations and employees in the digital environment and business adhere to established moral values?	Between Groups	6.117	3	2.039	3.982	0.009
	Within Groups	103.951	203	0.512		
	Total	110.068	206			

Source: authors' work

Welch's ANOVA revealed a statistically significant difference in the variable Perceived Truthfulness of Online Information among the different age groups, $F(3, 203)=7.108$, $p=0.000$. However, for the variable Ethical Standards of Online Information, it showed no statistical significance among the differences between the age groups, $F(3, 203)=0.814$, $p=0.487$. Additionally, Welch's ANOVA revealed a statistically significant difference in the variable Moral Values in Digital Business Practices between the groups, $F(3, 203)=3.982$, $p=0.009$. For the statistically significant variables, a Games-Howell post-hoc test was conducted.

Table following on the next page

Table 5. for the variables Perceived truthfulness of Online information, and Moral values in Digital business practices according to Age groups

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Do you think the information published on the Internet and social networks is true?	less than 30	31 to 40	0.02545	0.12419	0.997	-0.2995	0.3505
		41 to 50	-0.17096	0.12073	0.492	-0.4864	0.1445
		51 or more	-.51976*	0.13390	0.001	-0.8705	-0.1690
	31 to 40	less than 30	-0.02545	0.12419	0.997	-0.3505	0.2995
		41 to 50	-0.19642	0.11933	0.357	-0.5077	0.1149
		51 or more	-.54522*	0.13264	0.000	-0.8924	-0.1981
	41 to 50	less than 30	0.17096	0.12073	0.492	-0.1445	0.4864
		31 to 40	0.19642	0.11933	0.357	-0.1149	0.5077
		51 or more	-.34880*	0.12941	0.041	-0.6872	-0.0104
	51 or more	less than 30	.51976*	0.13390	0.001	0.1690	0.8705
		31 to 40	.54522*	0.13264	0.000	0.1981	0.8924
		41 to 50	.34880*	0.12941	0.041	0.0104	0.6872
Do you think corporations and employees in the digital environment and business adhere to established moral values?	less than 30	31 to 40	-0.13182	0.13132	0.748	-0.4755	0.2118
		41 to 50	-0.25271	0.13032	0.218	-0.5931	0.0877
		51 or more	-.49704*	0.15414	0.010	-0.9011	-0.0930
	31 to 40	less than 30	0.13182	0.13132	0.748	-0.2118	0.4755
		41 to 50	-0.12090	0.12835	0.782	-0.4556	0.2139
		51 or more	-0.36522	0.15248	0.086	-0.7648	0.0343
	41 to 50	less than 30	0.25271	0.13032	0.218	-0.0877	0.5931
		31 to 40	0.12090	0.12835	0.782	-0.2139	0.4556
		51 or more	-0.24432	0.15162	0.377	-0.6413	0.1526
	51 or more	less than 30	.49704*	0.15414	0.010	0.0930	0.9011
		31 to 40	0.36522	0.15248	0.086	-0.0343	0.7648
		41 to 50	0.24432	0.15162	0.377	-0.1526	0.6413

Source: authors' work

The Games-Howell post-hoc test indicated that the mean of the variable Perceived Truthfulness of Online Information was significantly higher for the age group 51 or more compared to the age group less than 30 (mean difference=0.51976, $p=0.001$), as well as compared to the age group 31 to 40 (mean difference=0.54522, $p=0.000$) and the age group 41 to 50 (mean difference=0.34880, $p=0.041$).

Furthermore, the Games-Howell post-hoc test indicated that for the variable Moral Values in Digital Business Practices, age groups differed significantly in one of the values – for the group aged 51 or more compared to the group less than 30 years old (mean difference=0.49704, $p=0.010$). The results showed H2 was accepted, indicating that older respondents are more likely to perceive the truthfulness of online information higher compared to younger respondents. However, the results rejected H4, as the statistical analysis did not find a significant difference in the levels of Ethical Standards of Online Information between different age groups. Lastly, H6 was partially confirmed, as the post-hoc test revealed statistical significance between only two groups for the variable Moral Values in Digital Business Practices. This shows that older respondents believe more strongly that moral values in digital business practices are adhered to compared to the youngest age group of respondents.

5. DISCUSSION

The results of this study supported hypotheses related to gender differences in truthfulness perception and moral values in digital business practices. Female respondents exhibited higher perceptions of online information truthfulness and ethical standards in digital business practices compared to their male counterparts. This aligns with existing literature suggesting that women tend to perceive certain practices as unethical more frequently than men, underscoring their greater ethical sensitivity. Moreover, age emerged as a significant determinant of truthfulness perception, with older respondents more likely to perceive online information as truthful compared to younger respondents. However, age did not significantly influence perceptions of ethical standards in online information, highlighting the nuanced nature of age-related differences in ethical decision-making. The findings also partially supported hypotheses concerning age-related differences in moral values in digital business practices. While older respondents tended to believe more strongly in the adherence to moral values compared to younger respondents, this difference was not statistically significant across all age groups. The research delved into the realm of ethical standards and perceptions surrounding online information, exploring the influence of gender and age on truthfulness perception and ethical standards. The study's findings provided insights into these dynamics, shedding light on the complexities of digital communication and ethical decision-making. Firstly, the literature review underscored the critical role of ethical standards in digital communication, emphasizing their significance in upholding integrity, credibility, and trustworthiness. The spread of fake news and misinformation highlighted the pressing need for robust ethical frameworks in online information dissemination. Gender and age emerged as pivotal factors influencing ethical perceptions and truthfulness judgments, with studies indicating variances in attitudes and behaviors across different demographic groups.

6. LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

It is essential to recognize the limitations inherent in this study. The sample size is relatively small and exhibits noticeable gender imbalances. Furthermore, the age groups are relatively small therefore limiting the results. Also, respondents may have been influenced by social desirability bias, potentially resulting in cautious responses regarding ethical behavior, despite the survey's anonymity. Additionally, because of the online questionnaire format, researchers lacked control over the conditions in which respondents completed the survey. These factors should be taken into account when interpreting the study's findings. Furthermore, the study's limitations extend to the potential influence of extraneous and confounding variables, which could have affected the observed outcomes. These variables might have distorted the genuine relationship between the variables of interest. To further reveal the complexities of perceptions regarding online information and digital business practices, future research could adopt qualitative methods to explore the underlying reasons behind gender and age differences.

Additionally, longitudinal studies could track changes in perceptions over time and assess the impact of evolving digital landscapes on ethical standards. Furthermore, comparative studies across different cultural contexts may provide valuable insights into the universality versus cultural specificity of perceptions regarding online information and digital ethics. Additionally, interventions and educational programs aimed at enhancing ethical awareness and decision-making in digital environments could help mitigate the spread of misinformation and promote integrity and trustworthiness in online information dissemination. Finally, research focusing on interventions aimed at promoting ethical behaviour and enhancing digital literacy among diverse demographic groups could contribute to the development of effective strategies for fostering trust and integrity in digital environments.

7. CONCLUSION

In summary, the study interpreted the complex interplay between gender, age, and ethical perceptions in the digital landscape. This study underscores the importance of considering demographic factors, such as gender and age, in understanding individuals' perceptions of truthfulness and ethical standards in online information and digital business practices. The findings suggest that women tend to perceive online information as more truthful and attribute higher moral values to digital business practices compared to men. Additionally, older respondents exhibit a higher perception of the truthfulness of online information, but age alone does not determine perceptions of ethical standards in digital environments. Future research should delve deeper into the underlying factors driving these demographic differences and explore the implications for promoting ethical conduct and trustworthiness in digital platforms. The study's findings underscored the importance of considering gender and age dynamics in understanding ethical decision-making and truthfulness perceptions in digital communication. Moving forward, further research in this domain could explore additional factors that may influence ethical perceptions and behaviors, fostering a deeper understanding of the complex interplay between individual characteristics and ethical standards in digital contexts.

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CROATIAN BANKS A YEAR AFTER EURO INTRODUCTION

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ABSTRACT

This paper examines the consequences of the introduction of the euro on banks' operations in terms of their profitability, as well as other business indicators, in the first year after the introduction of the euro. To remind, on the first of January 2023, the Republic of Croatia became the 20th country to join the Eurozone. The kuna, the local currency, has been replaced by the euro. Analysts' and bankers' opinions and attitudes are unanimous regarding short-term shocks and benefits for the banking system over the long term. In other words, estimations of the euro introduction summarize that the cost of introducing the euro will be high, it will be one-time, but it will be compensated in the future. Analysis of the available data on banks' performance in 2023 shows an increase in profitability, strong capitalization, a high level of liquidity, and improvement of the quality of loan and advances portfolio which is opposite to the estimated trends. Furthermore, some indicators have recorded the same level as ones in pre-pandemic years. Such results can be explained by the good preparedness of banks for another in a series of shocks to their business operations, the regular adjustment of business policies, and macroeconomic trends that did not have the same effects as the Member States that joined the Eurozone in the previous round.

Keywords: banks performance, Croatia, post euro introduction

1. INTRODUCTION

The introduction of the euro as the official currency in the Republic of Croatia has caused discussions about the positive and negative consequences that will befall the economy but also the banking sector. Although the preparations related to the introduction of the euro were timely, the public and all key stakeholders were familiar with all the details of the conversion, discussions remained on possible losses for the banks. According to research analysts and the bankers expectations of the euro introduction were same in terms of positive and negative effects. The positive effects of the introduction of the euro for banks were highlighted as long-term, while the short-term effects were highlighted as negative, primarily in terms of reduced profits due to the loss of part of the income related to exchange rate differences. The business policies of banks are therefore changed and adapted to the new regulatory, customer needs and market conditions. This paper provides answers how the banks were prepared for the introduction of the euro; how much the introduction of the euro had effects on the business performance (mainly in terms of profitability); and was the fear of (short-term) losses justified?

2. LEGAL FRAMEWORK FOR INTRODUCING THE EURO IN THE REPUBLIC OF CROATIA

Joining the euro area was one of the obligations the Republic of Croatia assumed under the Treaty of Accession to the European Union. The Council of the European Union decided on 12 July 2022 that Croatia fulfilled the necessary conditions for the adoption of the euro and that its derogation from participating in the single currency was to be abrogated with effect from 1 January 2023 (The Council of the European Union, 2022; European Commission, 2023.). In the meantime, Croatia has introduced and amended several legal acts to make the introduction of the euro legally harmonized. One of the first documents relating to the euro introduction as official currency was jointly prepared by the Government of the Republic of Croatia and the Croatian National Bank in April 2018, was the Strategy for the Adoption of the Euro in the

Republic of Croatia. The Strategy emphasizes the benefits of the euro adoption for the overall economy and provides possible effects on the banking sector mainly related to diminishing of revenues from currency transactions, reduction of fees for national and cross-border payments in euro, reduction of regulatory costs and interest rates. In contrast to the listed benefits that are long-term, according to the Strategy for the Adoption of the Euro in the Republic of Croatia, the costs of euro adoption are mostly one-off. One-off costs influencing banking operations are modifications of their business processes, cash changeover and loss of revenues related to the kuna to euro conversion (fees, interest income, foreign exchange gains). As part of the preparations for the introduction of the euro, the Government of the Republic of Croatia and the Croatian National Bank jointly prepared another document - the National Plan for the Changeover from the Croatian Kuna to the Euro in November 2020 (Government of the Republic of Croatia, Croatian National Bank, 2020.). In accordance with the National Plan for the Changeover from the Croatian kuna to the euro, in May 2022 the Croatian Parliament adopted the Law on the Introduction of the Euro as the Official Currency in the Republic of Croatia (Narodne Novine 57/2022) which introduced a set of rules and obligations for currency conversion. Likewise, the Croatian Parliament in 2020 amended the Credit Institutions Act (Narodne Novine 47/2020) and the Croatian National Bank Act (Narodne Novine, 47/2020) to create a legal basis for close cooperation with the European Central Bank.

3. ESTIMATIONS OF SHORT-TERM EFFECTS ON BANKING OPERATIONS

Although a small number of analysts were willing to present specific figures related to the expected effects of banks' operations after the introduction of the euro, they are all unanimous when it comes to whether there will be one-off and short-term costs for banks. Hrvoje Stojić, Group Economic Research Director in Addiko Bank Hrvatska, in April 2019 explained that on the Slovak model from 2009, he applied the main premises of influence on the Croatian banking system when it is about introducing the euro and he came to the calculation that banks would lose about HRK 1.4 billion (EUR 0.19 billion) on foreign exchange trading, about HRK 900 million (EUR 119.5 million) in interest income, HRK 150 million (EUR 19.9 million) in fees and another HRK 100 million (EUR 13.3 million) due to cost growth (employee education costs due to the introduction of the euro, etc.). He was talking about a one-off drop in revenue of about 7.5% (Jurman, 2019). Research analyst Beata Fojcik (2022) estimates that the Croatian banks are facing losing approximately 20% of their annual profit once the euro is going to be introduced. The long-term benefits from the change may make that a price worth paying, she concludes. Referring to data from the Croatian National Bank, she came up with the same numbers as Stojić. Namely, ditching the kuna is going to cost the industry some EUR 0.19 billion per year, mainly from lost foreign-exchange profits, reduced fees, and lower interest income. Lenders, according to her, will also suffer approximately HRK 900 million (EUR 119.5 million) of one-time costs because of the switch to euro. The banks' payoff for stated expenses may come from a stronger local economy, reduced foreign-exchange risk and regulatory benefits once they fall under European Central Bank oversight she concludes (Fojcik, 2022). The same opinion is shared by the heads of the largest Croatian banks who, at the roundtable entitled "The expected impact of the introduction of the euro on the operations of banks", stressed almost unanimously – the cost of introducing the euro will be high, it will be one-time, but it will be compensated in the future. Statements of the speakers at the roundtable expressing the concerns on consequences of introduction of euro follows (Hrvatska Udruga Banaka, 2022):

- Ivan Vlaho, President of the Management Board of the Zagrebačka Banka: *"An important rule is the principle of predictability. This means that in the majority of draft documents the most important things have to be predictable. But we have a dilemma about the bylaws. For example, ATMs must be filled with euro banknotes from January 1 and on December 31*

they will be filled with kuna banknotes. Our plan is to have 40 percent of ATMs ready on January 1."

- Dinko Lucić, President of the Management Board of the Privredna Banka Zagreb: *"The most challenging part is operations with clients. Supply of cash in due time to corporate clients and sole-traders is crucial. We need to ensure that our 70.000 clients receive cash on time. Since January 1 2023, there has been no return to kuna. We all need to prepare for the euro. No entrepreneur can stop working because the euros are missing."*
- Christoph Schoefboeck, President of the Management Board of the Erste Bank: *"There are three ways in which the decline in revenues can be compensated. First, through cost reduction – we will optimize. Secondly, the growth of the economy and markets as well as the need for financial instruments, thirdly the consolidation of the market and the banking sector, this is happening and will increase."*
- Mario Žižek, President of the Management Board of the Addiko Bank: *"The project of introducing the euro is a top priority in the bank. It often happens to all of us that projects' slide in a few days, but with the introduction of the euro there is no such thing. I must emphasize that five to seven percent of the bank's revenues will be lost when we introduce the euro."*
- Balázs Békeffy, President of the Management Board of the OTP Bank: *"Based on the experience of other countries, there will be an increase in the price of some services and products, but this will not be drastic."*
- Marko Badurina, President of the Management Board of the Hrvatska poštanska banka: *"We agreed that the costs were irreparable, in the short term. But in the long run, the net effects are positive. Lower risk, lower risk premium. We will compensate for the loss of revenue with the growth of the economy in the future."*
- Liana Keserić, President of the Management Board of the Raiffeisenbank Hrvatska: *"Tens of millions of euros is the cost of introducing the euro for us. This is the biggest change, and we can view it as a classic stress test. If the change is inevitable, the parameters are fixed, then there is an additional dimension – an opportunity to improve and learn. We have five key focuses – clients, leadership, risk management, technology and processes."* (Hrvatska Udruga Banaka, 2022)

As already stated, the views and opinions of bankers are unanimous in terms of short-term costs and long-term benefits after the euro is introduced and the Republic of Croatia joins the Eurozone.

4. CROATIAN BANKING SECTOR IN 2023

Key performance indicators for banking sector in 2023 show strong capitalization, a high level of liquidity, improvement of the quality of loan portfolio and an increase of profitability.

Year	Total capital ratio (%)	Leverage ratio	Liquidity coverage ratio (LCR)	Share of NPLs in total loans (NPL ratio)	Coverage ratio of NPLs	Cost-to-income ratio (CIR)	Return on assets (ROA)	Return on equity (ROE)
2019	24.8	12.6	173.7	5.5	68.0	46.3	1.4	9.8
2022	24.8	9.7	241.4	3.0	67.0	52.5	1.0	8.2
2023	23.6	9.2	238.1	2.6	69.0	41.0	1.8	15.5

Table 1: Key performance indicators of credit institutions (all data in %)
 Source: (Croatian National Bank - 3, 2024.)

According to reports of the Croatian National Bank, in 2023 total assets of banking sector increased by 3.5% in comparison to the end of 2022 and stood at EUR 78.6 billion (Croatian National Bank - 2, 2024.). Total loans grew by 2.0% relative to the end of 2022, whereas non-performing loans (NPLs) decreased by 11.4%. Such developments were recorded in two important sectors - household and non-financial corporations' sectors. Total loans growth was mainly driven by household loans and NPLs decreased the most in the portfolio of loans to non-financial corporations. Such movements resulted with the decrease of the share of NPLs in total loans from 3.0% to 2.6% at the end of 2023, continuing its years-long downward trend. The share of NPLs declined from 6.4% to 5.1% in the portfolio of loans to non-financial corporations and from 5.0% to 4.2% in the portfolio of household loans. Indicators of banking system capitalization remained high, while the banking system total capital ratio slightly dropped from 24.8% to 23.6% due to a decrease in total capital and an increase in risk exposure. The liquidity coverage ratio (LCR) also remained at very high level. At the end of 2023, all banks met the prescribed minimum liquidity requirements, with the average LCR standing at 238.1%. Efficiency in terms of cost-to-income ratio has improved to the level recorded in pre-pandemic years. Banks' operations generated EUR 1.4 billion in profit in 2023, i.e. it doubled comparing to 2022. (Croatian National Bank - 1, 2023.) Therefore, profitability indicators rose significantly. The return on assets (ROA) increased from 1.0% to 1.8% and return on equity (ROE) from 8.2% to 15.5%. As concluded "this was due to a rise in profit for the year, driven by the strong growth of interest income, with a marked contribution to this growth coming from income from overnight deposits with the Croatian National Bank" (Croatian National Bank - 2, 2024.)

4.1. Bankers' experience of the 2023 business performance

Just as the bankers were unanimous in predicting what the introduction of the euro will bring in 2023, they are still unanimous when it comes to reviewing business results in 2023.

Namely, analyzing the publicly available results of five biggest banks (Zagrebačka banka d.d., 2024.) (Privredna banka Zagreb d.d., 2024.) (Erste Bank d.d., 2024.) (Raiffeisenbank Austria d.d., 2024.) (Addiko Bank d.d. Croatia, 2024) that represent 82.6% of total banking assets (Croatian National Bank - 3, 2024.) in Croatia that are directly supervised by the ECB (European Central Bank, 2024.) it is to conclude that the bankers share their view when it is about the main reasons of such unexpected business results:

- increase of interest rates boosted the growth of interest income (as well as increase of loan volumes)
- cost management is disciplined
- monetary policy-makers contributed to the growth of interest income through operations with the central bank.

5. MOVEMENTS OF INTEREST RATES IN 2023

The rise of interest rates in the euro area began in July 2022 and ended in September 2023. In that period, the reference interest rates of the ECB¹ were raised by 450 basis points, and the most important interest rate at the moment is that on deposits (from excess liquidity) of banks at the central bank increased from 2.0% to 4.0% (European Central Bank, 2023.). EURIBOR², as a reference interest rate for the money market and loans, moved in a similar range until at the end of the year (Triami Media B.V., 2024.). This resulted with an adjustment of interest rates on loans and also on deposits.

¹ European Central Bank (ECB)

² Euro Interbank Offered Rate (EURIBOR)

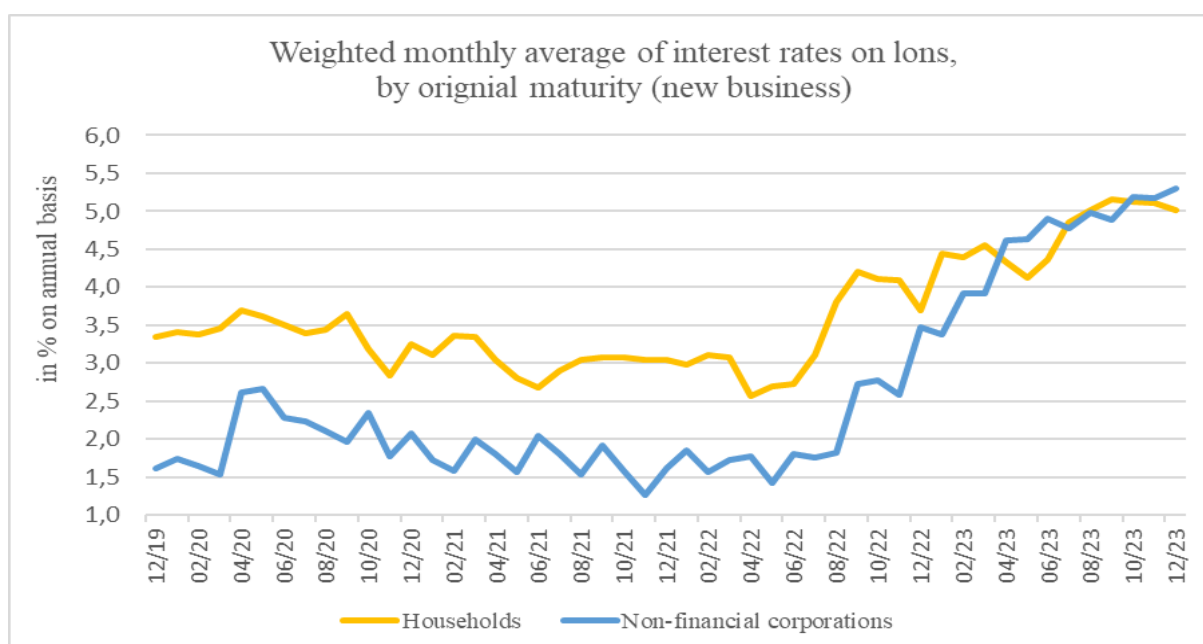


Figure 1: Credit institutions' interest rates on loans by original maturity (new business)
 Source: (Croatian National Bank -4, 2024.)

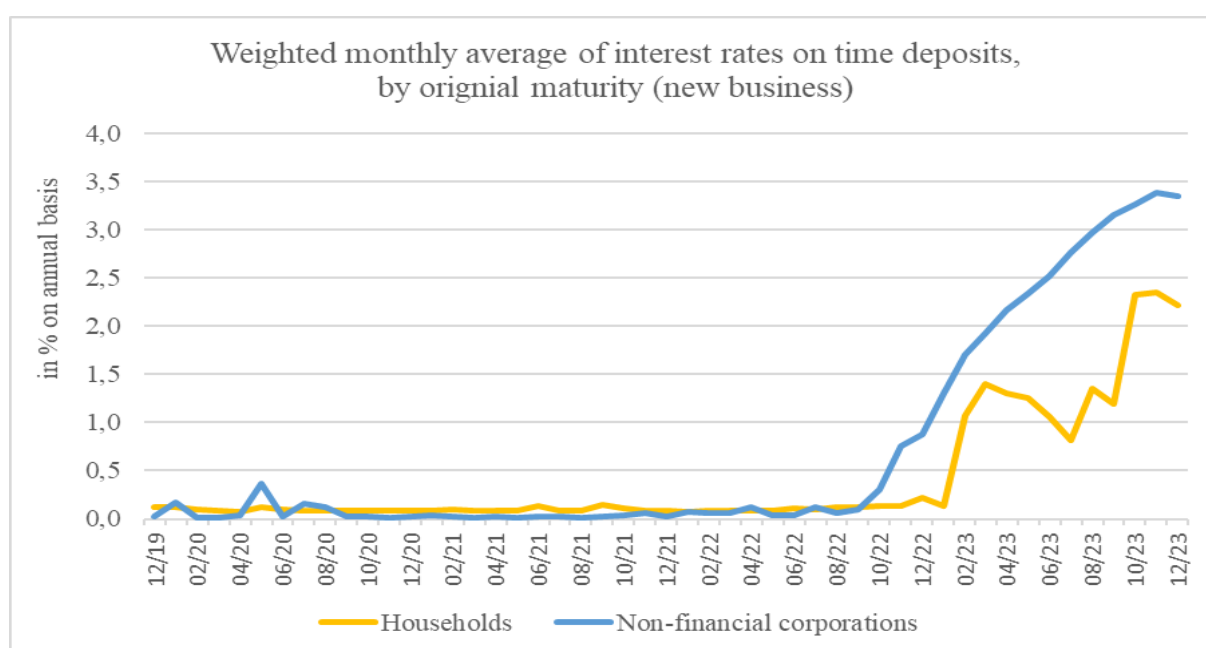


Figure 2: Credit institutions' interest rates on deposits by original maturity (new business)
 Source: (Croatian National Bank -4, 2024.)

The interest rate channel of monetary policy transmission in Croatia was somewhat less pronounced than in other countries for several probable reasons: the high level of liquidity of the banking system, which was greatly increased after the conversion of the kuna to the euro upon joining the euro area, strong competition among banks, a greater share of fixed interest rates on loans in Croatia, especially for households, and also the existing regulation of adjustment of interest rates in loans to households. The adjustment of interest rates on deposits was slightly accelerated after the placement of securities with attractive returns to citizens as a kind of competition in attracting citizens' savings.

6. CONCLUSION

Predictions and analysis on euro introduction effects for banking system took a quite some time among bankers and research analysts before introduction took place. Research analysts and bankers were unanimous in predicting short term losses and long term benefits for the Croatian banking sector after euro introduction. Trying to apply models and experiences of other countries that introduced the euro as official currency before Croatia, predictions were not in favour for the banks in short term period due the expected losses in transactions related to foreign exchange such as foreign exchange trading, interest income and fees. On the other hand unquestionable was preparedness of the banks in terms of operational performance, i.e. cash changeover. Preparations for the cash changeover as the most visible element of the adoption of euro was done smoothly and efficiently what was recognized by EU Commission in its report on the introduction of the euro in Croatia (European Commission, 2023.). However, operating results of the banks in Croatia in 2023 showed that timely adjusting business policies to the market and macroeconomic conditions is one of the keys to perform the best possible scenario – to increase profit and simultaneously remain highly capitalized; to improve the quality of the loan portfolio and efficiency with the high level of liquidity. Once again, and in line with stated above, the Croatian banking system proved to be stable, well-capitalized, liquid and profitable despite challenges that occurred due euro introduction. At the same time, surprisingly market and macroeconomic conditions (strong competition among the banks; growth of interest rates in time of inflation's growth; and monetary policy-makers contributions) proved that fears of losses after and due to euro introduction were unjustified. It is to conclude that conducted analysis proved that the assumptions of introducing the euro and its short-term effects on banks' operations were wrong for the benefit of all stakeholders.

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CAN THE EMBEDMENT OF THE EUROPEAN UNION LEGAL ORDER BE A SOCIAL MARKET ECONOMY?

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ABSTRACT

The content and structure of the economic system is one of the fundamental issues for the existence of any organized society. The content and scope of the substantive answer to that question are regularly followed by legal norms that regulate the economic system in a formal sense. This paper investigates the foundation of European Union legal order in a certain economic order. Therefore, the following questions need to be answered: does this economic order even exist in EU law, when did it develop, who are its holders and what is the impact of the entry into force of the Treaty of Lisbon? Special focus is devoted to the inclusion of the social market economy as one of the objectives of the EU established by primary European Law. Elaboration of the answers to the research questions is carried out primarily through the analysis of the judicial practice of the Court of the EU and the administrative practice of the European Commission, and secondarily of other institutions from the beginning of the integration process until today in selected area: the law of market freedoms. The general approach of the European Court in the application of the norms of primary law is analysed over certain periods of time, with an emphasis on the freedom of movement of goods.

Keywords: *Economic Constitution, EU Legal Order, Social Market Economy*

1. INTRODUCTION

The substantive content and structure of the economic system is one of the fundamental issues in the existence of any polity. Legal norms are by necessity embedded in such economic system. Neither of established systems is static in nature - they all are open to various structural variations and, more importantly, redefinitions (Hall & Soskice, 2001). The Lisbon Treaty introduces new aim of the European Union Internal market - highly competitive social market economy. Introduction of highly competitive social market economy as the aim of the EU defined by Lisbon Treaty (Article 3, paragraph 3, Treaty on the Functioning of the European Union) is the particular focus of the paper. However propaedeutic dictates that we should firstly consider to ask the question, however self-evident that question may seem at first: is the EU a free market economy at all? Primary research aim of this paper is to determine is there a specific economic order embedded in the legal norms of Law of the European Union in light of the introduction of social market economy as legislative aim. Secondary paper aims are to produce answers to the following questions:

- Who are the main representatives of that economic system in EU legal and institutional structure?
- When did particular model of EU economic system emerged – at the beginning of the integration process or later / what is the influence of the Lisbon Treaty?

The paper will focus, in order to provide answers to the primary and secondary research questions, on the case law of the Court of Justice of the EU and the administrative practice of the European Commission from the beginning of the integration process until present day with particular focus on free movement of goods. Methodology of this research relies both on legal and economic theory. Both positive and normative method of economic analysis of law are used. In the analysis of legal and institutional development of the European integration process research also uses historical approach (method).

2. IS THE EU A FREE MARKET ECONOMY?

Embedment of EU Law in the general framework of free market economy (capitalism) may seem like an obvious claim. However, consequently to the universal rule that economic systems are open to various structural variations and redefinitions even this, seemingly obvious, claim has to be re-examined. Arguments for the embedded of EU Law in free market system are numerous, ranging from aims of the Union established by the primary law over the high level of protection of property rights to the existence of a highly sophisticated system of competition rules. Arguments to the contrary are not so abundant. Probably most striking example of anti-free market setting is Common Agricultural Policy (CAP) with high degree of intervention in the spontaneous price setting market mechanism. However, this example, especially in the light of Commissions efforts to reduce subventions and constant lowering of CAP share in the EU budget, is too fragmentary and cannot lead to general conclusions. Arguments to the contrary have also emerged in another legal area. Recent trend of lowering standards for intellectual property protection when it comes to new technologies has been detected in the course of the research. European Parliament has denied ratification of the Anti-Counterfeiting Trade Agreement (ACTA) in 2012. In the same year Grand Chamber of the Court of Justice has ruled in *SAS Institute* judgement (Case C-406/10) that computer programming language cannot be protected by EU intellectual property rules. In the words of Advocate General Bot this would amount to monopolising of ideas. Described recent trend could signal shift, especially in the light of parallel historical emergence of capitalism and intellectual property law in the West, toward something new. Of course, one cannot dispute existence of high level of general protection of intellectual property rights in the EU. Thus this is at best only indication of beginning of change and cannot lead to the general conclusion on the end of free market economy in Europe.

3. ECONOMIC CONSTITUTION AND DEVELOPMENT OF THE EUROPEAN LEGAL ORDER

Economic constitution can be generally defined as the set of fundamental legal principles and institutional normative frameworks that govern economic activity within certain jurisdiction. Interestingly, the term originally arose within German ordo-liberal economic circles in first half of 20 centuries. (Nörr, 1994). Coincidentally ordoliberalism also served as the basis for development of the concept social market economy (Glossner & Gregosz, 2010). Thought the historical development of European integration process argument could be made that economic constitution has been much stronger integrative force in comparison with other fundamental influences like for instance rule of law (e.g. Goldner Lang, 2019) or general political constitutionalism (e.g. Rodin, 2001). In this part of the paper we will analyse development of the legal order of the European integration process and its relation with the economic constitution on the example of the case law of the Court of Justice of the EU with emphasis on free movement of goods as one of the fundamental market freedoms arising from the primary EU Law. Integration process can be generally divided into three phases: 1st from Treaty of Rome until Treaty of Maastricht (1957-1992), 2nd until Treaty of Maastricht to Lisbon Treaty (1992-2009) and 3rd from Lisbon Treaty to present day (2009-). The Court of Justice has very early in its case-law started to deliver substantive economic views (Weiler 1991), even before establishment of the European Economic Community (EEC). Maybe the best example is the 1954 judgment in the *France v High Authority* case (1/54). During the period of (silent) legal revolution in the sixties Court of Justice has, by introducing principle of direct vertical effect and supremacy of European law in landmark *Van Gend en Loos* (26/62) and *Costa v. ENEL* (6/64) cases, set framework for future judicial regulatory policy. This was exercised in dominantly informal dialogue with the Commission.

This judicial behaviour can be viewed in the light of the institutional choice, general theory developed by Niel Komesar - theory of comparative institutional analysis (Komesar, 1981). Empty chair crisis and consequent, legally dubious, Luxembourg Accords in the mid-sixties greatly influenced the initial ambitious pace of integration process. The initial rapid development of supranational and neofunctional trends had to be corrected by intergovernmental political reality. However, process of gradual transfer of regulatory powers to supranational bodies, Council, Commission and Court of Justice primarily (recently and to European Parliament) could not be halted. Liberal idea that furthers free trade as best deterrent for future wars in Europe directly linkable to the classical economic liberal thought and David Ricardo's theory of comparative advantage (Ricardo, 2004 -originally 1817) has been in the heart of European integration process from the beginning to the present day. Empty chair crisis, as the most serious one, and all consequent crises combined with inherent structural tensions of the integration process have formed the open nature of the EU economic order until recently. Former Advocate General Miguel Maduro in his rewarded PhD research (Maduro, 1998) has also come to the conclusion that European economic constitution is open in nature. This open nature, as Maduro (1998) shows, encompass several fundamental structural tensions: centralisation v. decentralization, liberalism v. anti-protectionism and regulation v. deregulation. Based on the conclusions of the Court's majority approach, Maduro makes the claim that the concept of economic order in the judicial practice of free movement of goods is not fundamentally neoliberal (Maduro, 1998). Instead, the Court acts in an activist manner as a defence against state intervention and a means of transferring the decision-making process regarding internal market issues from the level of individual member states to the EU level. In this sense, the scope of Article 34 is expanded through different areas. However it should be noted, as this research detects, that open nature of this order/constitution must be viewed within the general framework of liberal economic thought. Furthermore, as this research will show, after the entry in the force of the Lisbon Treaty open nature of EU economic order has somewhat changed. The constant crises and structural tensions have influenced the Court of Justice to make institutional choice and emerge as regulatory forerunner in the development of market integration process. Paralyzing effects of Luxembourg Accords meant that member states and Commission were not effectively able to perform this task. In particular, this was the case in seventies. The Court of Justice has selected the area of free movement of goods as regulatory striking fist in advancing of integration process. Once when the Court has pronounced widest possible *Dassonville* (Case 8/74) formula practically all national measures could be interpreted as prohibited quotas (measures having equivalent effect to quantitative restrictions, Article 34. TFEU). Vast regulatory space was opened. Demonstrated level of judicial activism is unprecedented development in the legal history of international organizations. Naturally for judicial institution of limited capacities, tucked away in the fairy Duchy of Luxembourg, as US scholar Eric Stein once famously wrote (Stein, 1981), this vast regulatory space could not be filled in its entirety. Often overlooked conclusion is that Court had, from the very beginning of the main anti-protectionist activity in the famous *Cassis de Dijon* judgement (Case 120/78) , autonomously limited its regulatory scope. This has executed by introduction of self-made judicial construct - mandatory requirements and their variants. Again, described judicial action can be interpreted in the light of Komesar's (1981) theory of institutional choice. *Cassis de Dijon* judgement generally marks the beginning of specific proportionality test that will dominate judicial regulatory policy of market freedoms in EU Law. This proportionality test with its many variants is basically example of economic analysis of law. It answers to the question on the necessity for the regulatory intervention. One should bear in mind that regulatory intervention, in EU Internal market law in general and in the area of free movement of goods in particular, is primarily aimed at national measures that could actually or potentially have an impact on trade among Member States.

Thus, this intervention in the protection of market freedoms could not be interpreted as the application of economic due process clause. Substantive underpinning for proportionality test is the quest for efficiency. However, the Court of Justice often has to balance market interest with wither social (non-market) ones. During the course of time initial anti-protectionist (anti-discriminatory) application of the proportionality test has gradually shifted away, especially since *Keck* judgement, towards market access criteria. Introduction of different standard for rules regarding product requirements (rules relating to goods themselves) and selling arrangements, generally attributed to the *Keck* judgement, has further limited regulatory scope of judicial policy. Main reason for this new limitation is change within the political process. The Single European Act in 1986 and the subsequent Treaty of Maastricht in 1992 have demolished paralyzing effects of the Luxembourg Accords. Legislative process became more able to deal with market integration. Therefore, *Keck* (Joined cases C-267/91 and C-268/91) judgement can also be viewed as institutional choice. Parallel application of judicial interpretation established in the area of free movement of goods to other market freedoms is not hierarchical translation. Quite expectedly criteria for application to other market freedoms often differ. However, similarities prevail. Somewhat surprising is that Court recognizes, in limited areas, wider regulatory reach to other market freedoms. This argument most obviously emerges from the question of horizontal direct effect. In the area of freedom to provide services, for example, Court recognized horizontal direct effect as early as 1974 in *Walrave and Koch* (Case 36/74) judgement (Vuletić, 2014). Yet we do not record parallel interpretation of free movement rules of goods to the present day. Free movement of capital Treaty provisions should be excluded from the general analytical framework of market freedoms inter-relationship until entry in to force of the Directive 88/361/EEC. Simultaneously to decreasing level of judicial activism in the area of free movement of goods Court (with possible exception of taxation) has increased regulatory activity in other marker freedoms. Excellent example is *Centros* (C-212/97) Case judgment in the area of free movement of capital by virtue of which Court initiated regulatory competition and liberalization of national incorporation rules (and quite possible in the future EU Company law rules). This too is, of course, an institutional choice. Unavoidable conclusion is that in maximally harmonized areas Court does not demonstrate tendency towards judicial activism. Gradual increase of Union competences intensively started by Treaty of Maastricht and culminated with the Lisbon Treaty profoundly influenced judicial market regulatory capacity. Quite expectedly regulatory impetus from other, non-market, fields of competence is increasing.

4. INTRODUCTION OF SOCIAL MARKET ECONOMY IN THE EU LEGAL ORDER

Entry into legal force of Lisbon Treaty (1st December 2009) is extremely important for the main subject of this paper. The Lisbon Treaty introduces brand new aim of the EU Internal market - highly competitive social market economy. There cannot be any doubt that social market economy is a concept of German origin and refers originally to the post-war economic model of West Germany. The fundamental formative influence on the concept of social market economy, first named by Alfred Müller – Armack in 1946 *Soziale Marktwirtschaft* (Müller – Armack, 1990 – originally 1946) is ordoliberalism. Ordoliberalism originated in the interwar period from the Frieburg School of economic thought but it differs from it and should not be confused with neoliberalism. Ordoliberals believe in the entrepreneurial liberties and interpreted them as fundamental rights. However, what sets them apart from the neoliberals is the advocacy for strong interventionism in the market executed with purpose of protecting free market mechanism (*ordungspolitik*). Naturally, for ordoliberals competition rules are of outmost importance. Although social market economy concept owes great deal to ordoliberal idea two are not synonymous.

Social market economy implies a greater degree of intervention in the market in order to protect the wider societal, non-market, interests than original ordoliberalism. In social market economy balancing between non-market and market interest is never done by *a priori* hierarchical prioritising. According to the theory of double asymmetry of European integration developed by Fritz W. Scharpf (2010) from Max Planck Institute for the Study of Societies there are inherent impediments for realization of the social market economy as the legislative aim of EU Internal market. Scharpf's fundamental premise is that the model of social market economy is inherently less competitive than model of liberal market economy. Two model developed by Scharpf are basically taken from Hall/Soskice classification (Hall & Soskice, 2001) Thus, according to Scharpf, social market economy cannot prevail in the emerging European market economy. This interaction is demonstrated in Figure 1.

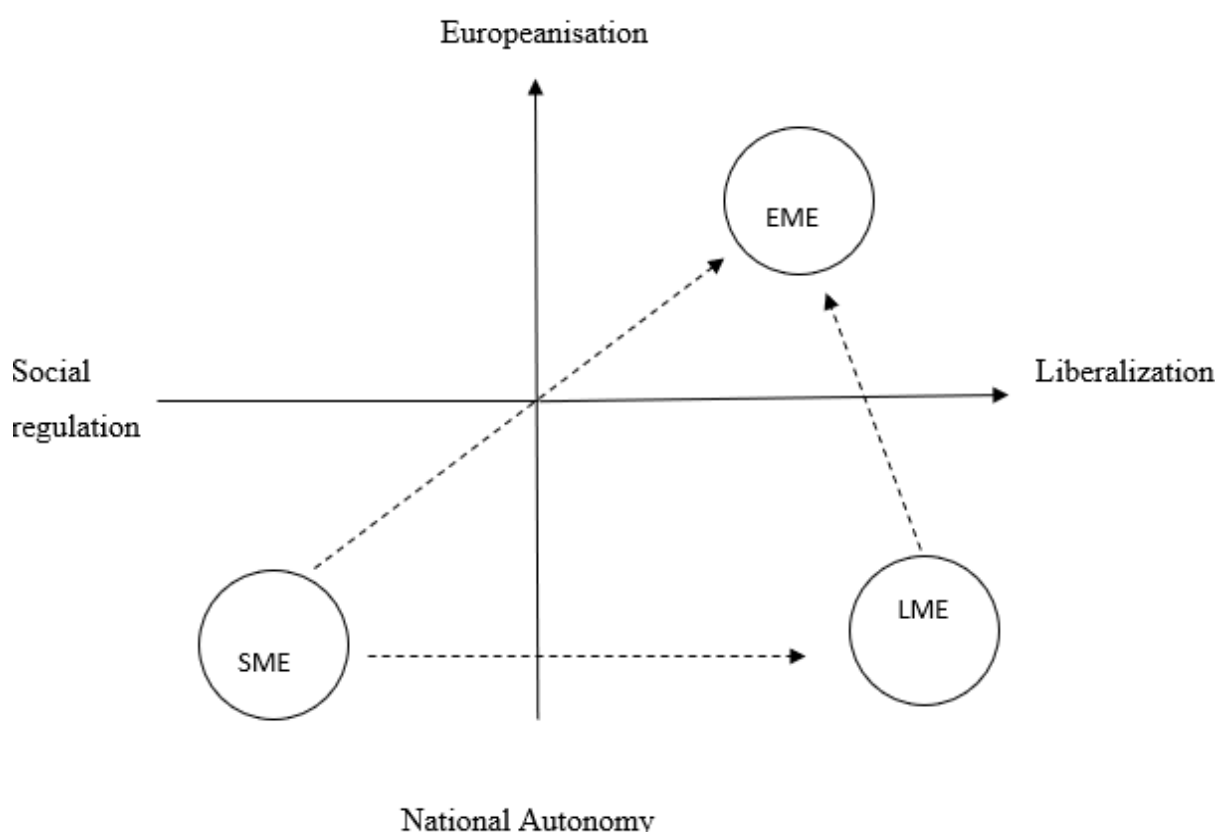
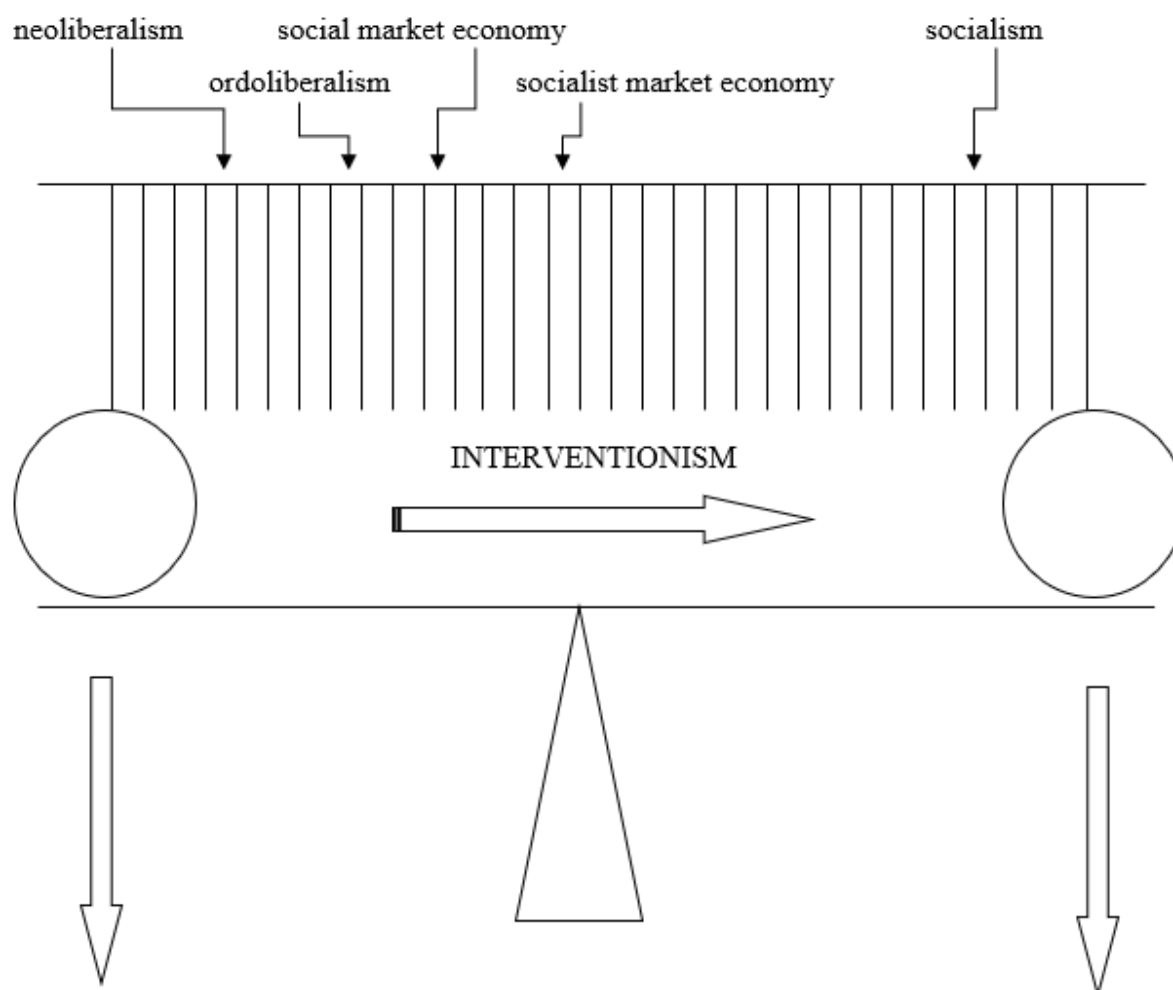


Figure 1: The effect of Europeanization on Social Market Economies, Liberal Market Economies and the emerging European Market Economy according to Fritz W. Scharpf (Source: Scharpf 2010)

However, Europe's economic reality refutes this basic Scharpf (2010) premise. Model of social market economy triumphed in the economic crisis that started in Europe in 2008. Germany as Europe's strongest economy succeeded in introducing its economic model (social market economy) within the Lisbon Treaty as the aim of the Union. Furthermore, if one as for example Jorges and Rödl (2005) in their paper do, interprets German Federal Constitutional Court's Maastricht judgement (case about the constitutionality of Treaty of Maastricht) and the Lisbon Treaty judgement from the perspective of transferral of regulatory powers in market related areas following conclusion seems plausible: there is an institutional expectation from EU regulatory bodies in the sense that they should act as the protector of the interest of social market



*Figure 2: scale of anti-market interventionism
 (source: author)*

economy. Finally, one should not forget that according to the principle of sincere cooperation (Article 4, paragraph 3, TEU) the Member States shall facilitate the achievement of the Union's tasks and refrain from any measure which could jeopardise the attainment of the Union's objectives. This paper in refutation of the theory of double asymmetry in European integration formulates scale of anti-market interventionism as shown in Figure 2. This scale indicates argumentation EU legal order and economic reality firmly stands on the position of social market economy.

5. CONCLUSION

Important conclusion of this research is that after the entry into legal force of Lisbon Treaty once open nature of the economic order (as described by Maduro) become more closed. Economic order of the EU will be executed within the framework of social market economy model. Interestingly even on most simple level on analysis, textual one, we can find evidence for this conclusion. While the former Treaty of Nice has actually used the term *open market economy* Treaty of Lisbon uses *social market economy*. Naturally social market economy is quite heterogeneous concept but more homogeneous than the open nature as described by Maduro. In the same time we cannot, as demonstrated by the case law on free movement rules, support conclusion of ordoliberal embodiment of EU law. Simply, there is no valid reading of free movement rules as the economic due process.

Although possible change in regulatory trends, like recognition of direct horizontal effect of free movement of goods rules or establishment of maximally harmonized system in private enforcement of competition rules, could lead to different conclusion in the future. The research has shown that EU Law, in particular free movement are embedded in economic order. This economic order existed from the very beginnings of the European integration process and was, for the most part, open in nature within the general framework of free market economy and liberal economic idea. The main representatives of EU economic order are the Commission and Court of Justice. Following the entry into legal force of the Lisbon Treaty European economic order became more closed in nature and it will be materialized, in accordance with the principle of sincere cooperation, within the social market economy model.

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ANALYSIS OF THE SATISFACTION OF BUSINESS ENTITIES OF THE REPUBLIC OF CROATIA WITH THE USE OF PUBLIC ADMINISTRATION E-SERVICES

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ABSTRACT

The development of national economies is observed through the development of the entrepreneurial and public sector, as well as e-services of public services. Therefore, the development of e-services, which are necessary for the development of the private sector, as well as the development of the entire national economy, is extremely important. The rapid development of e-government, especially in developing countries, has created the conditions that allow countries to realize numerous benefits. Today, e-services are used as a key tool to increase efficiency, transparency of spending, and to facilitate public sector reforms. Therefore, the aim of the paper is to determine whether the satisfaction of using e-services for business entities in the Republic of Croatia is at a satisfactory level. Statically and graphical processing of empirical research data on a sample of 154 respondents, users of e-services of business entities, shows partial satisfaction with the work of e-services. While the expression of satisfaction or dissatisfaction with the use of e-services for business entities in the Republic of Croatia is significantly statistically related to the size of the company and the age of the respondents

Keywords: *satisfaction analysis, e-services, business entities*

1. INTRODUCTION

The development of national economies is observed through the development of the entrepreneurial and public sector sectors, as well as e-services of public services. Therefore, the development of e-services, which are necessary for the development of the private sector, as well as the development of the entire national economy, is extremely important. The rapid development of e-government, especially in developing countries, has created the conditions that allow countries to realize numerous benefits. Today, e-services are used as a key tool to increase efficiency, transparency of spending, and to facilitate public sector reforms. Public administration e-services are becoming a powerful engine that enables governments to achieve their goals of public administration development and reform. Public administration e-services are crucial for the modernization of the economy. Innovative e-services enable quick and efficient provision of relevant state and personal data to citizens through an electronic system. This ensures that citizens and entrepreneurs have timely access to information without unnecessary bureaucratic burden. The electronic age brings with it a huge potential for the transformation of various aspects of work, business, administration, and even public administration. The concept of e-government, through the continuous development of e-services, includes the integration of network technologies for the provision and implementation

of government services, with the aim of becoming a global standard. Today's e-governance often comes with promises to improve existing models of public administration, especially in terms of increasing efficiency, which is one of its key values. In addition, these technological advances support improved service delivery, resulting in increased productivity and cost reduction in business processes. The vision of public administration is to empower citizens, entrepreneurs and the economy as a whole, through transparency and participation in decision-making on public policy, thereby strengthening the democratic process and ensuring better governance of the state. The aim of this paper follows from the above, which is to point out the importance of synergistic action of the public and business sectors and the importance of developing effective commercial and public services and their implementation in business operations and public administration.

2. TERM AND CHARACTERISTICS OF PUBLIC ADMINISTRATION E-SERVICES

Digitization and digital society have become everyday and an indispensable part of private and business life, and it is turning into something that has become commonplace and irreplaceable, therefore we are talking about the digitalization of public administration and the application of public administration e-services. Management is defined as administration that has the purpose of achieving goals through the systematic arrangement of tasks and the smart use of resources with the aim of achieving efficiency and effectiveness (Schumpeter 2015). E-government is usually defined as the use of information and communication technology (ICT) to provide public services, which is closely related to administrative management. Information and communication technology (ICT) management is considered the responsibility of CEOs and boards of directors and includes leadership, organizational structure and processes that ensure that the company's technological system is supported and advanced in line with the organization's strategies and goals (Srića and Muller, 2001). Progress in ICT development, broadband internet access availability, widespread use of various modalities of electronic business creates opportunities for faster, safer and more efficient accounting data management (Vinšalek Stipić & Vičić, 2022a). As for e-government, there are four main types, which refer to specific types of services provided (Aryal 2018):

- 1) Government to Citizen (G2C - Government to Citizen)
- 2) Government to Business (G2B - Government to Business)
- 3) Government to Government (G2G Government to Government)
- 4) Government to Employee (G2E Government to Employee)

A broader view of e-administration, i.e. e-services of public administration, encompasses a wide range of government services and activities that are shaped and used by information and communications. Digital governance combines two elements that were less connected in the past. The first is a system within the government itself and society as a whole, which is shaped by the use of electronic technologies such as computing, e-mail, the Internet, the World Wide Web, wireless networks, together with governance models such as user/citizen/entrepreneur focus and integration through one window or screen. The goals of e-government, through the development of e-services, are focused on several key aspects, including better efficiency, transparency, administrative renewal, improving the quality of services and increasing timeliness with lower costs (Voogd, 2007).

2.1. Digitization of the public administration of the Republic of Croatia

In technologically developed countries, innovations and progress happen spontaneously, while in Croatia these processes progress more slowly and with greater challenges. However, recently significant progress has been noticed and more and more efforts are being made to develop the so-called digital society in which, apart from the state, the entrepreneurs themselves participate.

A stronger connection of the Croatian economy plays a key role in achieving goals such as improving transparency, faster state action and providing more efficient public administration services (Šimović et al., 2010). Some of the key problems of using information systems are data storage, the security of stored data, and the impossibility of changing historical data (Vinšalek Stipić & Vičić, 2022b). Today, Croatia is trying to compensate for the late start of the development of electronic administration through projects such as e-Citizens, which has been available to the citizens of the Republic of Croatia since 2014. The development and use of the electronic services system requires the possession of an electronic identity and the ability to authenticate that identity and a single point of delivery of information for citizens and entrepreneurs. It is a complex task that requires a large commitment of human and financial resources. At the beginning of the modernization of public administration, Croatia faced various difficulties, including (Ministry of Administration, 2017):

- lack of a developed mechanism for e-identity verification
- absence of a centralized service for issuing credentials
- lack of a secure mechanism for delivering personalized information to users
- fragmentation of information and electronic services
- poor information and knowledge of the public about the availability of electronic services

Therefore, for the progress of digitalization, in January 2023, the Digital Croatia Strategy for the period until 2032 was adopted, which is harmonized with the National Development Strategy of the Republic of Croatia until 2030 (NRS 2030). NRS 2030 is the hierarchically highest and comprehensive act of strategic planning that directs the long-term development of society and the economy in all key areas for Croatia. This national development strategy defines four main development directions, within which there are thirteen strategic goals. Throughout the document, the need for investment in digital infrastructure and the implementation of digital solutions is emphasized in order to meet the needs of citizens and improve the Croatian economy (Croatian Parliament, 2023).

2.2. E-services for business subjects in the Republic of Croatia

With the accelerated pace of development of e-services for business entities, the business sector is trying to facilitate operations by simpler and faster performance of business activities. Using e-services brings a number of benefits to business, including (FINA, n.d.):

- quick and easy access (provides quick and easy access to the necessary information and tools via the Internet)
- security (e-services provide a high level of data security through encryption and other security mechanisms)
- better business organization (improves business organization through more efficient document management, project monitoring and communication within the team)
- time and paper savings (eliminates the need for physical documents and manual processes, resulting in time savings and reduced costs associated with printing and paper storage)

The following state administration and public service services are available to business users: e-Pension, e-Tax, e-Health, e-Customs, then FINA e-services: e-Invoice for business entities, e-Invoice in public procurement, Web e-Signature, e-Archive, e-Payment, info.BIZ, Register of Annual Financial Statements (RGFI), e-Regos, WEB-BON, e-Blocks, e-Auction, WEB register of concessions. According to the available data of the Economic and Social Digitization Index (DESI) for 2022, the Republic of Croatia was above the average of European Union countries in the category "Integration of digital technology". It took the central position in the list among EU member states, being in 14th place out of 27 countries.

According to DESI, among SMEs in Croatia, 50% have at least a basic level of digital intensity, which is slightly below the EU average of 55%. Regarding the application of ICT for the purpose of environmental sustainability, 75% of Croatian companies record a medium/high intensity of green measures using ICT, which is significantly higher than the EU average (66%). Croatia records worse results for the sub-objectives "Electronic sharing of information" (24%) and "Use of social networks for business purposes" (24%), which indicates that the acceptance of very advanced and integrated IT solutions in the work of companies is limited. However, Croatian companies take advantage of the opportunities offered by online commerce: 29% of SMEs sell online (above the EU average of 18%), while 13% of all SMEs sell cross-border, and 13% of turnover comes from the segment internet sales. Advanced digital technologies are becoming increasingly popular among Croatian companies. Thus, 35% use cloud solutions, 43% use e-invoices, and 9% use disruptive technologies based on artificial intelligence (AI), whereby Croatia is above the EU average for all three indicators (Croatian Parliament, 2023).

3. RESEARCH METHODOLOGY

Electronic business includes all forms of roles and activities of the government, local and regional administration and institutions in the field of information and communication technologies. There is a growing consensus among governments around the world on the need to revitalize business e-services to facilitate the delivery of services to citizens and businesses, with the aim of reducing costs and increasing efficiency, while improving online quality and security. The aim of the research follows from the above, to prove that companies in Croatia use e-services for business entities to a significant extent and that satisfaction with e-services is at a satisfactory level.

Based on the above, the research hypotheses are derived:

H1 – The satisfaction of using e-services for business entities is significantly related to the size of the company

H2 – The satisfaction of using e-services for business entities is significantly related to the age of e-service users

H3 – Satisfaction with the use of e-services for business subjects in the Republic of Croatia is at a high level

The research was conducted on the basis of a survey questionnaire that was created using a Google Forms form intended for business users of e-services in the Republic of Croatia. The research was carried out in the period from February 15 to March 15, 2024 via e-mail and social and business networks. The respondents included in this research are employees of businesses that use e-services in the Republic of Croatia. The selected research method is considered suitable for obtaining relevant answers in a short period of time, especially due to the possibility of sending the questionnaire quickly and the availability of company contacts, as well as due to the speed of responses to the survey questionnaire. Also, the fact that electronic mail and social networks are the most common form of modern business communication was taken into account. On the basis of the set hypotheses, the dependent variable satisfaction with the use of e-services was obtained from the survey questionnaire with a weighted average rating of answers to questions about the degree of satisfaction with the use of e-services on a Likert scale from 1 to 5 (1-absolutely disagree; 2-disagree ; 3-neither agree nor disagree; 4-agree; 5-absolutely agree).

4. RESEARCH RESULTS

The total research sample is 154 respondents who use e-services for business entities in the Republic of Croatia. The research covered 18 large companies, 38 medium-sized companies, and 98 micro and small companies.

The SPSS software package (version 26.0, SPSS Inc., Chicago, IL, USA) was used for statistical data processing, and the results were presented graphically and tabularly. A simple Pearson correlation model was used to prove the set hypotheses.

Table 1: Simple regression model of satisfaction with e-services and company size

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,575 ^a	,330	,316	,362	,330	26,622	1	54	,000	2,176
a. Predictors: (Constant), V_pod										
b. Dependent Variable: Ze_serv										

In Table 1, the correlation coefficient (0.575) indicates a positive correlation between Satisfaction with the use of e-services for business entities is significantly related to the size of the company. When examining the ratio F, it was observed that the empirical ratio F is significantly higher than the theoretical value. This suggests that the surveyed companies do not come from the same population, but from different industries, resulting in greater variability between groups. An F ratio that is greater than 1, but given the significance level of 0.05 and the number of degrees of freedom (1.54), and taking into account the Durbin-Watson value of approximately 2 indicating the absence of autocorrelation error, it can be concluded that there statistical significance of the analyzed model. This implies that the satisfaction of using e-services for business entities in the Republic of Croatia is higher in large companies, which is also shown by the positive correlation coefficient.

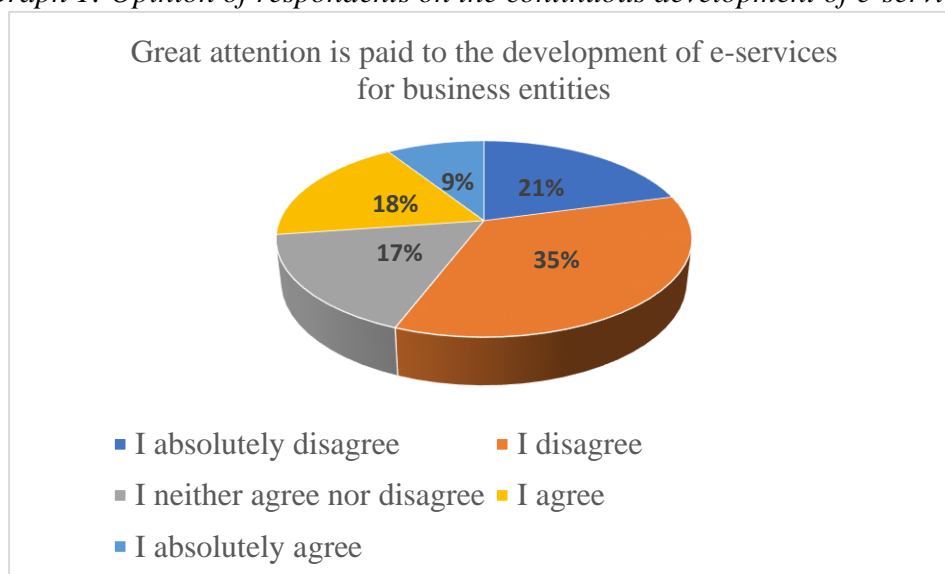
Table 2: Simple regression model of satisfaction with e-services and age of e-service users

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,432 ^a	,185	,170	,366	,185	12,288	1	54	,000	2,002
a. Predictors: (Constant), Dob										
b. Dependent Variable: Ze_serv										

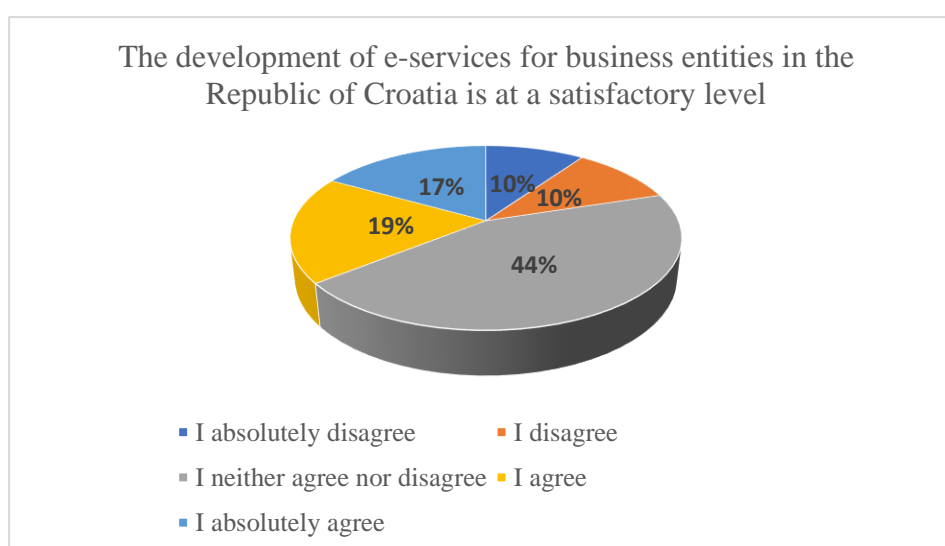
From the correlation coefficient R (0.432) in Table 2, we can see a positive statistically significant relationship between the analyzed variables. However, the coefficient of determination R² is closer to zero than to unity, which indicates poor linearity of the model. The F ratio is higher than the theoretical value because the samples are from different economic activities. Taking into account the significance level of 0.05 and the number of degrees of freedom (1.54), we conclude that the satisfaction of using e-services for business entities is significantly related to the age of e-service users. Durbin-Watson has a value of 2, which indicates the absence of autocorrelation of relational errors.

Graph following on the next page

Graph 1: Opinion of respondents on the continuous development of e-services



Graph 2: Opinion of respondents on the development of e-services



Static and graphic data processing of empirical research on a sample of 154 respondents, users of e-services of business entities in the Republic of Croatia shows partial satisfaction with the work of e-services. However, the expression of satisfaction or dissatisfaction with the use of e-services for business entities in the Republic of Croatia is statistically significantly related to the size of the company, i.e., greater satisfaction is expressed by users of e-services of large companies, thus confirming the first research hypothesis. Furthermore, the expression of satisfaction or dissatisfaction with the use of e-services for business entities in the Republic of Croatia is statistically significantly related to the age of the respondents, that is, younger respondents express greater satisfaction, which leads to the assumption that the use of e-services represents the routine performance of work for younger populations in compared to the elderly. This confirms the second research hypothesis. However, the analysis of the graph shows that the surveyed users of e-services for business entities in the Republic of Croatia are not completely satisfied with the development, appropriate continuous improvement and adequacy of e-services, and it can be concluded that the third research hypothesis is partially confirmed.

5. CONCLUSION

Public administration e-services enable the provision of relevant state and personal data to citizens and businesses in electronic form in a timely and efficient manner. This technological innovation aims to improve service delivery, empower citizens and businesses through access to information without bureaucracy, increase productivity and reduce costs in business. Therefore, the goal of this work was to prove that companies in Croatia use e-services for business entities to a significant extent, and the level of satisfaction with e-services is at a satisfactory level. Static and graphic data processing of empirical research on a sample of 154 respondents, users of e-services of business entities in the Republic of Croatia shows partial satisfaction with the work of e-services. However, the expression of satisfaction or dissatisfaction with the use of e-services for business entities in the Republic of Croatia is statistically significantly related to the size of the company and the age of the respondents, thus confirming the first and second research hypotheses. However, respondents are not completely satisfied with the development, appropriate continuous improvement and adequacy of e-services, the third research hypothesis is partially confirmed. The main purpose of every public administration is to provide services to users through the efficient execution of their tasks, which are determined by law. The application of information and communication technology (ICT) and electronic services (e-services) promotes economic growth through increased employment in sectors dealing with e-solutions, acceleration of business with public administration and raising the quality of employees through the use of ICT. With the aim of improving the user experience, the public administration strives to enable easy access to administrative procedures, provide services via the Internet and encourage all participants to participate in the creation of a digital state.

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INTRODUCTION TO BLOCKCHAIN TECHNOLOGY

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ABSTRACT

In this work, we have defined the basic concepts of blockchain technology, its applications, problems, ways to solve them and options for using and applying smart contracts that are closely related to blockchain technology. We have defined the advantages of using and applying blockchain technologies and smart contracts in everyday cases as well as the advantages of using them for the government with the example of Estonia as the country that best applied Blockchain technology in the form of improvement for all its citizens. We additionally defined problems and attempts to manipulate blockchain technologies, types of attacks and potential and current solutions for the same.

Keywords: *Blockchain, Smart Contract, Private Blockchain, Crypto Wallet, Double Spending, Sybil Attack*

1. INTRODUCTION

Every day, an average of 361.6 billion emails are sent worldwide (Statista, 2024), and over 41 million messages are sent on WhatsApp every minute (Statista, 2023). The value of transactions in the digital payments market is projected to reach USD 11.55 trillion in 2024 (Statista, 2024). In 2022, 2.5 quintillion bytes of data were generated daily, and Google processes about 6 billion searches daily, storing data on a million servers, while Amazon has 1.4 million servers. It is estimated that over 200 zettabytes of data will be stored in the cloud by 2025. Four companies (Facebook, Google, Amazon, and Microsoft) manage most of the data, increasing the risk of cybercrime and unfair data trading. In recent years, there have been major data breaches: Alibaba (2019, 1.1 billion records) and LinkedIn (2020, 700,000 records). In 2020, EasyJet was attacked, exposing 9 million records, and violating GDPR. Current data protection is insufficient. Blockchain technology, which guarantees data immutability and security, can be a solution. Estonia was the first to implement this technology in 2008 using Keyless Signature Infrastructure after a hacking attack. The founder of blockchain technology is an unknown person or group known as Satoshi Nakamoto. They used this technology to create the most well-known cryptocurrency, Bitcoin.

2. WHAT IS BLOCKCHAIN

Blockchain is a distributed database, or a digital ledger, in which all transactions are recorded chronologically, meaning it contains data on all transactions executed over a peer-to-peer network. Transactions are recorded chronologically and grouped into interlinked blocks that are cryptographically secured and organized into chains. The transaction data contained in these blocks cannot be altered and are considered reliable and secure. Blockchain technology allows all users of the blockchain network to see the history of all transactions ever made by anyone in the network (Yassine et al., 2020). In 2009, Satoshi Nakamoto wrote the Bitcoin Whitepaper, in which the principles of blockchain technology were presented through the example of the

cryptocurrency Bitcoin. Because this was the first publicly available document and application of the technology to a cryptocurrency, it is considered the catalyst for blockchain technology. A whitepaper is an informative document usually issued by a company, nonprofit organization, etc., to promote their own solutions, products, or services that they offer or plan to offer. Whitepapers are also used as a method of presenting government policies and laws and gauging public reaction. The purpose of a whitepaper is to promote a particular product, service, technology, or methodology and explain the complete principle of the idea's functioning. In the case of cryptocurrencies, a whitepaper is used to fully present a new coin or token, its purpose, the method of market entry, the method of capturing the largest possible market share, and the business methods and system in which the project managers are presented, all with the aim of gaining the trust of potential investors so that they invest in a particular project, crypto coin, or crypto token. Although whitepapers are written in an academic style, they serve more as a marketing tool than as a technical or user document developed to provide support to the user after purchasing a product or service.

2.1. Blockchain Terminology

The ledger is a digital collection (database) of all transactions carried out on a peer-to-peer network. The ledger is distributed so that each node on the network has a copy of the same ledger. Nodes in blockchain technology are individual computers or devices connected in a distributed network. The computers on the network constantly exchange information about new transactions and blocks. Nodes form the infrastructure of the blockchain and maintain a copy of the blockchain (the "ledger").

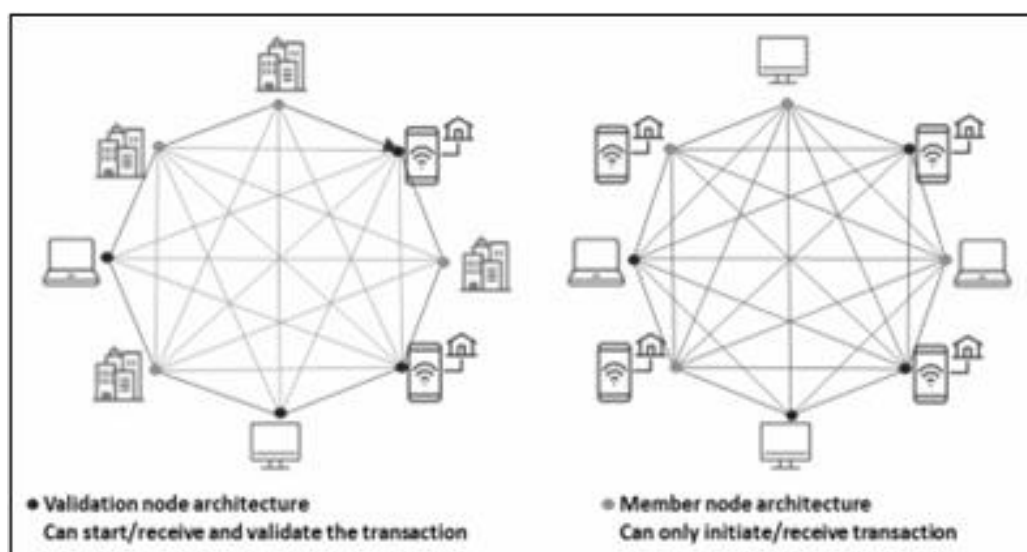


Figure 1: Blockchain nodes

Source: https://www.researchgate.net/figure/Network-architecture-of-a-university-campus_fig1_342284949

Nodes in blockchain technology are individual computers or devices connected in a distributed network that exchange information about new transactions and blocks. Nodes form the infrastructure of the blockchain. The blockchain consists of blocks linked in a chain. Each block is validated through a unique hash value containing the previous block's value, creating a chain like a DNA strand.

2.2. The structure of a block

A block consists of the block header and the block body. The block header contains metadata about the block:

- Hash of the previous block (the block it links to) - since the hash of the previous block is contained in the hash of the new block, all blocks in the blockchain are linked to each other. Without this component, there would be no connection or chronology between each block.
- Transaction details in the form of a Merkle tree root hash - contains transaction details displayed as a 256-bit hash value. Transactions are stored in a list format (in the transaction details), which then passes through a hash algorithm. The hash values are paired and re-encrypted until only one value remains. This value is called the root hash of the Merkle tree.

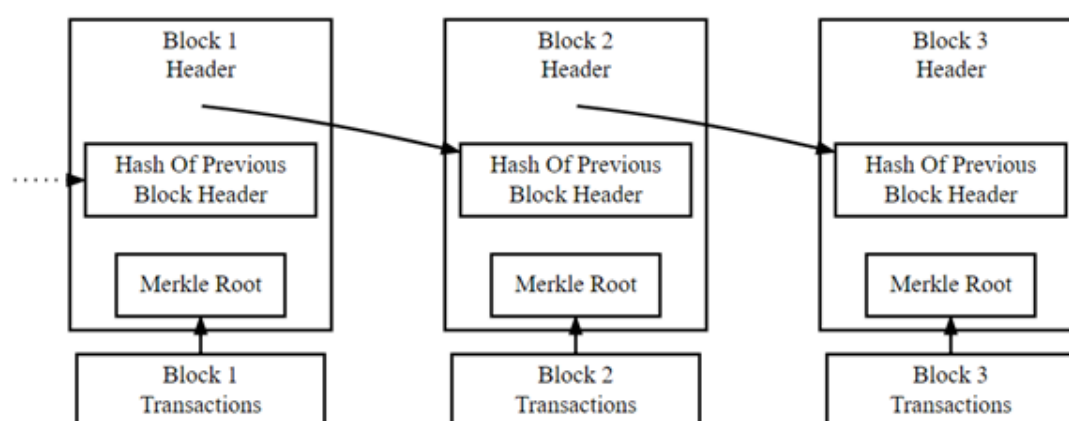


Figure 2: Block structure and the principle of recording in the blockchain

Source: <https://blog.gsdcouncil.org/beginners-guide-to-blockchain-technology-part-2/>

2.3. Types of Blockchain

2.3.1. Public Blockchain

Its main characteristics are that it is open-source, unrestricted, distributed, and fully decentralized. Any entity with internet access can join this Blockchain and become an authorized user, miner, or develop their own blockchain application. The content of the "ledger" is easily accessible to everyone at all times, making this type of chain completely transparent. The most significant advantage of this type of chain is the absence of control, meaning all nodes on the network are equal, and no single node is given preference over others. Functionality and security are achieved through a consensus mechanism. The consensus mechanism is fault-tolerant and is used to maintain agreement among the nodes in the network. As the network expands, the number of nodes increases, making it quite challenging to reach a consensus on the correctness of the data. A public blockchain requires the participation of all users to verify and authenticate transactions. Since the blockchain is a dynamic, self-regulating system, it requires the implementation of a secure mechanism to ensure the authenticity of transactions by having participants in the network reach a consensus on the correctness of the transaction. There are various methods of consensus mechanisms, but they all have the same goal and application: to confirm the correctness of the data in a public blockchain (IEEE Access, 2024).[<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9376868>]

2.3.2. Private Blockchain

Although at its core a private blockchain is still a distributed and immutable database, this type of chain's network of nodes consists only of selected members with permission to participate in the network (permissioned blockchain). Unlike public blockchains, private blockchains have a

central authority that controls authorization, participation, and accessibility, which can be compared to how banks and central banks operate, where the central bank regulates and controls the operations of all banks. Users must obtain the consent of the central authority to join the private chain. Any update or change in the blockchain requires the permission of the central authority. These differences make private blockchains more secure compared to public ones. Therefore, private blockchains have found their application in e-voting, exchanging patients' medical records, supply chain management, etc. The most well-known private blockchains are Hyperledger, R3 Corda, and KSI (Statista, 2024). Hyperledger Fabric supports permissioned memberships. All network participants must have known identities, such as name, surname, personal identification number, and voting location for electronic voting. Many business sectors, like healthcare and finance, are bound by data protection regulations that require the safeguarding of data about various participants and their access to different data points. Hyperledger supports such permission-based memberships for individuals who can access the data (Hyperledger, 2018) [https://8112310.fs1.hubspotusercontent-na1.net/hubfs/8112310/Hyperledger/Offers/HL_Whitepaper_IntroductiontoHyperledger.pdf]

2.3.3. Hybrid blockchain

Hybrid blockchains are a combination of public and private blockchains. They combine the privacy and permissioned access of private blockchains on one hand, with the transparency and flexibility of public blockchains.

2.4. Algorithms

To add transactions and the entire block to the chain, they need to be validated using a consensus protocol. The first block in the chain is called the Genesis block. Adding each subsequent block requires reaching a consensus, even in the presence of malicious users. The most prevalent consensus models are:

- **Proof of Work (PoW)** - This model is designed for an environment where there is no mutual trust among users on the network, and consequently, the possibility of collusion and fraud is minimal or nonexistent. PoW is a consensus protocol in which each user/node gains the right to add a new block to the blockchain after solving a cryptographic puzzle (the solution involves determining a HASH value lower than the target value). The node that first succeeds in solving the puzzle gains the right to add the block to the blockchain and thus receives a reward for their work (usually in cryptocurrency). At first glance, PoW seems like a very simple protocol, but determining the hash value is extremely difficult. Nodes must constantly adjust the NONCE to get the correct hash, which requires significant computational power, but verifying the solution is very simple.
- **Proof of Stake (PoS)** - The node for adding a block is selected based on the stake it holds. A larger stake increases the chance of selection. Once selected, the validator exclusively creates the block, while other nodes do not expend energy. This protocol saves energy and time, but it favors nodes with larger stakes.
- **Delegated Proof of Stake (DPoS)** - Nodes with a higher stake participate in voting to select the creators of the next block. They cannot create blocks themselves but vote for candidates. If the chosen candidate does not create the block, the selection process is repeated.

Transactions are added to the chain only after consensus is reached, and each model has its own advantages and disadvantages.

3. THE SECURITY OF BLOCKCHAIN TECHNOLOGY

Blockchain technology produces a data structure with inherent security qualities. The security of blockchain technology is based on the principles of cryptography, decentralization, and

consensus, which ensure trust in transactions. In most blockchains or Distributed Ledger Technologies (DLT), data is structured into blocks, and each block contains a transaction or a set of transactions. Each new block links to all previous blocks in a cryptographic chain in such a way that it is almost impossible to alter. All transactions within the blocks are confirmed and agreed upon through a consensus mechanism, ensuring that each transaction is true and accurate. Distributed Ledger Technology (DLT) refers to the technological infrastructure and protocols that enable simultaneous access, validation, and updating of records in an immutable manner across a network spread over multiple entities or locations. [<https://www.ibm.com/topics/blockchain-security>]. Blockchain technology enables decentralization through the participation of members in a distributed network. There is no single point of failure, and no single user can alter the transaction records.

The key features of blockchain that ensure data security on the network are:

- Immutability of data in blockchain means that once data is recorded in the blockchain, no one, not even the system administrator, can change it. The data provider can prove that the data has not been altered, and as a data recipient, one can be sure that the data has not been tampered with.
- Transparency - Transactions stored on the blockchain are immutable and accessible to everyone on the network at all times. Every change is recorded by network nodes and disclosed in near real-time, ensuring data transparency.
- Traceability of data - Transactions in blockchain are recorded chronologically using timestamps. Blockchain tracks every movement of transactions using a hash function.
- Decentralization - In blockchain, decentralization refers to the transfer of control and decision-making from a centralized entity (individual, corporation, or group of people) to a distributed network.
- Trust factor - Trust plays a major role in conducting transactions. Blockchain enables unknown entities to have secure transactions without any external influence or interruptions, providing a reliable environment for transferring assets securely.

Blockchain technology has the potential to become the most secure way to protect data and transactions on the Internet. Its properties of immutability, transparency, and data availability could be drivers of a revolution that will make digital documentation more accurate, correct, and secure than paper documentation.

Blockchain has its vulnerabilities that pose risks to the security of digital data and assets, and some of these include:

- Traditional Challenges: One of the advantages, but also potential drawbacks of Blockchain, is its decentralization feature, meaning the "main ledger" is distributed among all network users, which could negatively impact data verifiability.
- Private Key Management: Private keys are a direct means of authorizing accounts and data in Blockchain (BC). In the event of an attack on the user's computer and the theft of a private key, the user may suffer significant financial damage, as well as theft or exposure of private (personal) data.
- Cryptojacking: Cryptojacking is the unauthorized installation of malicious software on someone else's computer or mobile device with the aim of using their computing power for cryptocurrency mining. Users are often unaware of the presence of malicious software on their computer, while the other party profits from unauthorized use of computing resources.
- Hash Function Vulnerability: The vulnerability of this crucial function in blockchain is currently only a presumption. Hash could be compromised if the attacker has access to vast computing resources or a quantum computer.

- **Network Vulnerability:** Today, Distributed Denial of Service (DDoS) attacks are one of the most common attacks on the internet. Despite being a peer-to-peer technology, Blockchain is still vulnerable to DDoS attacks. Blockchain networks such as Ethereum and Bitcoin are often subjected to DDoS attacks. This type of blockchain vulnerability pertains to public chains. The attack is executed by fake digital wallets sending a large number of fake transactions to the network, potentially leading to service denial and increased processing time, as nodes must verify the validity of all transactions, including those falsely sent via DDoS attacks.

3.1. Vulnerability of the consensus mechanism

Blockchain operates based on establishing mutual trust, or a consensus mechanism. For example, in a Proof of Work (PoW) system, a transaction is confirmed as valid once it is verified by 50% +1 of the nodes. However, if a single user controls more than 50% of the nodes in the network, they can gain control over transactions. This can be achieved by accumulating mining power in a few mining pools. Similarly, Proof of Stake (PoS) has a vulnerability point where a single user holding 51% of the stake on the network can potentially enable the following attacks:

- Inserting fraudulent transactions
- Manipulating the blockchain network
- Outperforming all other users in the blockchain network
- Executing a double-spending attack
- Theft of other users' assets

3.2. Double Spending

Malicious entities exploit the vulnerability of chain reorganization during the mining of a new block or chain by broadcasting new transactions or stealing transaction data being mined, leading to double spending — i.e., reusing the same coin for two different purchases/trades or transactions. Although such occurrences are possible in some cases, the likelihood is significantly lower compared to unauthorized use of others' funds through wallet access theft.

3.3. Sybil attack

In this attack, the attacker sets up fake auxiliary nodes and tries to isolate or redirect a portion of the blockchain network to disrupt existing transactions or confirm only blocks created by the attacker. A successful Sybil attack can disable the functionality of the consensus algorithm and potentially lead to a double spending attack.

3.4. Security measures

3.4.1. Measures to prevent double spending

The process of transaction creation and mining in the Bitcoin network provides an extremely prominent level of protection against double spending. Protection is achieved by enforcing a simple rule where only unspent transaction outputs from previous transactions can be used as inputs in subsequent transactions, and the order of transactions is determined chronologically and further secured through cryptography. The possibility of double spending decreases with an increasing number of transaction confirmations, and the most effective and straightforward way to prevent double spending is to wait for a higher number of confirmations of the transaction's validity before delivering goods or services to the payment recipient.

3.4.2. Measures for protecting digital wallet

The digital wallet contains information about a private key used to sign transactions unique to each user. Since personal computers are frequent targets for hacking, one solution is to store the private key offline, on paper or a physical key storage device.

3.4.3. Measures to prevent DDoS attacks

This type of attack can be effectively controlled using several solutions. One solution is traffic control on the network, using machine learning techniques to identify the source of the attack within the network, which can then be isolated until resolved (debugged). Another approach is configuring the network to preemptively prevent the transmission of harmful packets and requests from spoofed ports, or implementing third-party solutions that oversee DDoS protection by monitoring the network and detecting changes in the behavior of nodes and digital wallets.

4. SMART CONTRACTS AND THEIR APPLICATIONS

Smart contracts were first conceptualized by Nick Szabo in 1996. The primary goal of a smart contract is to execute the terms and conditions of an agreement, automatically reducing the need for intermediaries. A smart contract consists of data and code or programmed applications that are implemented through digitally signed transactions over a blockchain network. Contract execution is performed by nodes, and results are stored on the blockchain. Regardless of the number of nodes executing the action, the result of the actions must always be the same. Smart contracts are traceable and irreversible, aiming to provide exceptional security and legality of contracts while reducing contracting costs. Well-known platforms for creating smart contracts include Ethereum and Hyperledger Fabric, with Solidity being a popular programming language used for writing them. The application of smart contracts has a wide range of uses that continues to expand daily:

- Voting - currently used as a secure voting process. The problem is that trust is needed in a third party organizing such electronic voting that the votes are valid. Active solutions are sought to reduce or eliminate such organizations' influence.
- Digital identity - smart contracts could be used to archive all important personal data such as: personal identification number (OIB), date of birth, grades from specific subjects in exams, date of completion and levels of education, certificates of good conduct, and anything similar that is necessary for understanding an individual who, for example, is applying for a job or wishes to obtain a personal identification card / passport.
- Decentralization of finance - Moving finance into the virtual world with decentralization, without a standard centralized body like the Croatian National Bank (HNB) for the Republic of Croatia. Such a financial system relies on majority consensus and is not susceptible to censorship or manipulation of money by smaller groups.
- Supply chain - Tracking a specific good/service from production to the customer. It provides data to potential buyers, additional information they want to know, such as production dates to ensure there is no manipulation in changing recommended usage dates or anything else. It is particularly useful in cases where large chains increasingly withdraw batches of certain products due to distinct reasons. This way, it would be easier to know exactly which customer received a specific product to promptly notify them of any issues.
- Creating your own currency system
- Decentralized autonomous system - A system in which users are given the ability to manage the system through voting, validation, approval, or denial of specific items.
- Protection of copyright / patent right - Smart contracts can serve to create a transparent system where all copyrights and patents, creation dates, and community validation of a

particular work are recorded. This way, the rights of the creator of the idea/work and the ability to enforce them could be protected in the long term.

- Transaction tracking - smart contracts are used to transparently track transactions to and from each account created within the system, enabling transparency in the world of finance.
- Banking - when using smart contracts for banking, there is no need for intermediaries. Therefore, by choosing a suitable platform that utilizes smart contracts, the costs associated with large transactions, loans, or anything else can be significantly lower compared to the standard banking system as we know it.

5. APPLICATION OF BLOCKCHAIN TECHNOLOGY IN THE WORLD

The European Commission states that soon 90% of jobs such as engineering, accounting, nursing, medicine, arts, architecture, and many others will require a certain level of digital skills (cf. Cisco, 2018). We are witnessing how technology can transform businesses and governments, driving global innovation. Digitization will enable countries to maintain global competitiveness, increase GDP, foster innovation, and create new jobs.

5.1. Estonia provides a compelling example

Wired Magazine has proclaimed Estonia as the most advanced digital society in the world. In a digitally connected world, the way citizens wish to participate in interactions with the government and public sector is changing. This shift is driven by the opportunities offered by modern technology. For governments and public administrations, this means not only successful and rapid service delivery but also significant reduction in operational costs. Using blockchain technology and societal digitalization, Estonia saves 1,400 years of working time annually and 2% of its GDP. Estonia began testing blockchain technology in 2008 in response to cyber-attacks in 2007. Blockchain technologies have been in public use in Estonia since 2012 to ensure the integrity of state data and systems, particularly in their national registries such as healthcare and judiciary. Estonia plans to expand blockchain technology to other areas such as medicine and cybersecurity. The blockchain technology used by Estonia has been implemented into NATO's and the US Department of Defense's systems, confirming that KSI (Keyless Signature Infrastructure) has solved the scalability issue of blockchain.

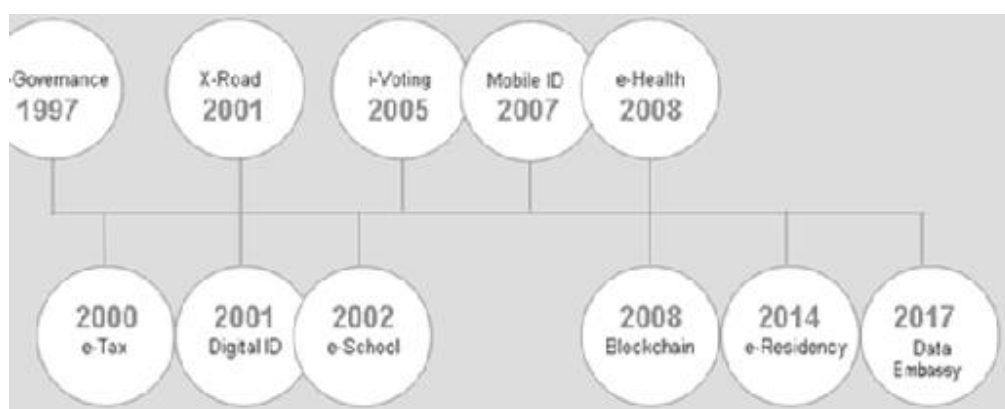


Figure 3: Development of the digital society in Estonia

Source: <https://www.pwc.com/gx/en/services/legal/tech/assets/estonia-the-digital-republic-secured-by-blockchain.pdf>

The fundamental structure, and the backbone of Estonia's successful digitalization, is X-Road. It is a technological and organizational environment that enables secure internet data exchange between information systems. X-Road is based on an interoperable ecosystem and blockchain technology (KSI - Keyless Signature Infrastructure).

The characteristics of X-Road are:

- Decentralized architecture - without a central point vulnerable to attacks or failure.
- Platform and architecture independence - X-Road allows users access to all information services regardless of software platform.
- Multilateralism - X-Road members can request access to all data services provided by X-Road.
- Accessibility and standardization - international standards and protocols are used for managing and developing X-Road where possible.
- Security - data exchange via X-Road does not compromise the integrity, availability, or confidentiality of data.

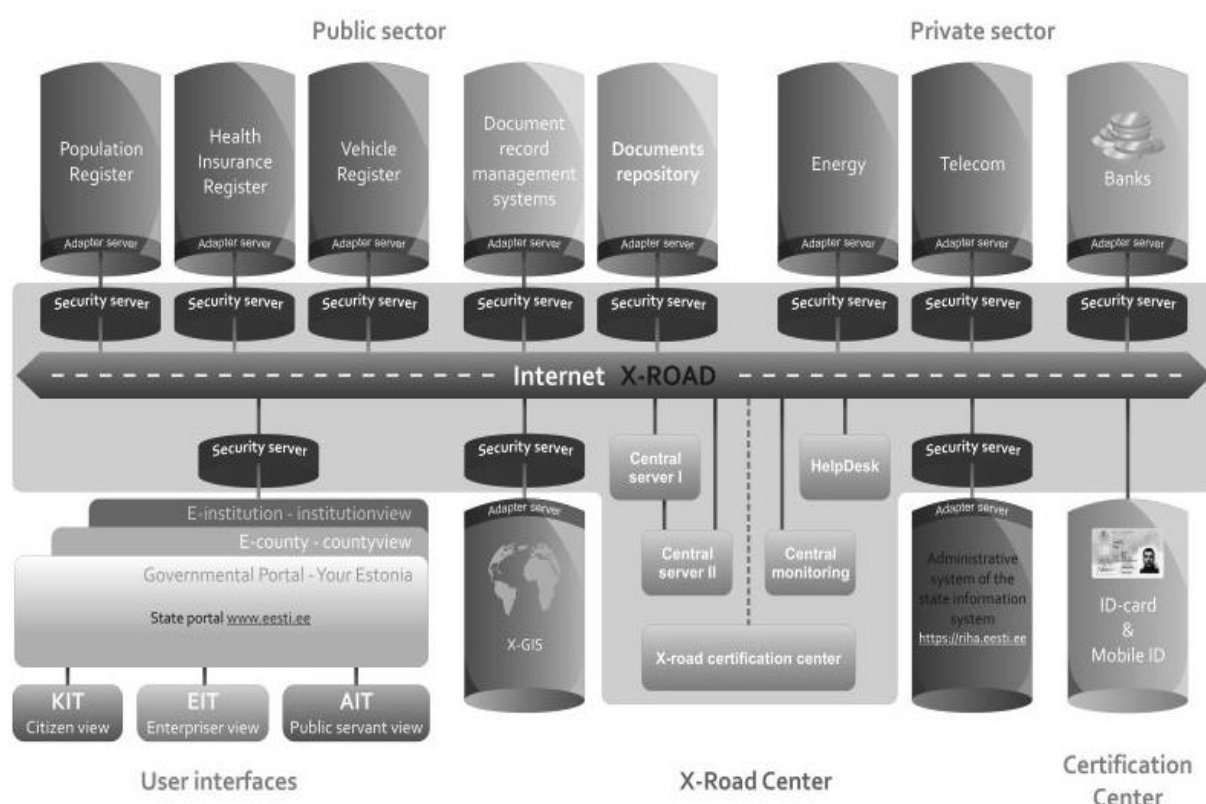


Figure 4: Overview of the X-Road infrastructure

Source: https://www.researchgate.net/figure/Overview-of-the-X-Road-infrastructure_fig1_225164114

5.2. Practical use of blockchain in Singapore

The first Blockchain Innovation Center in Singapore was established in July 2016 as a partnership between IBM and the Singapore Economic Development Board. The result of this partnership is the development of the higher education sector. Ngee Ann Polytechnic, a public institution of higher learning in Singapore, has also adopted Blockchain. By implementing smart contracts, Blockchain is used to verify the authenticity of educational institution diplomas - the first educational institute in Singapore to do so. Alongside student IDs, potential employers can access academic records and education histories, and students' diplomas can be automatically published on their LinkedIn profiles. The student ID confirms that the student has graduated.

6. CONCLUSION

Blockchain technology as part of Web 3.0 has the potential to change the way the entire internet network operates and its architecture. The principles on which it is based enable users to manage and access data at any time, ensuring security in the truthfulness of available data and guaranteeing that entered data cannot and will not be altered later. Blockchain technology is applicable in both public and private sectors and, in addition to the mentioned advantages, significantly reduces operating costs. Estonia is an excellent example of the benefits of implementing blockchain technology in the public and private sectors. However, implementing this technology is not simple, and it will certainly require considerable effort to refine and introduce it into everyday life. It necessitates changes not only in network architecture but also in the overall perception and habits of using the internet, legislative frameworks, and international relations. It is reasonable to assume that the need for protecting and managing personal data, as well as streamlining and reducing the cost of public administration services, will be sufficient drivers for faster and broader implementation of this technology and its further development.

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DIGITAL TRANSFORMATION AND ARTIFICIAL INTELLIGENCE IN TEACHING FOREIGN LANGUAGE FOR SPECIFIC PURPOSES: A PROPOSAL OF A CULTURE TEACHING STRATEGY MODEL

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ABSTRACT

Higher education must adapt its pedagogical methods in the context of continuous technological innovations characteristic of the digital age. There is an inevitable need to integrate artificial intelligence (AI) into teaching processes, which transcends traditional teaching and emphasises AI as a necessary tool for the realisation of cultural competencies. This paper explores the transformative role of AI in teaching foreign language for specific purposes (TFLSP), where language skills merge with awareness of the sociocultural contexts that shape language. The paper emphasises the ability of AI tools to simulate an actual communication situation enriched with cultural nuances, which enables participants to gain a deeper and more authentic understanding of the language. Virtual assistants and interactive technologies enable the exploration of cultural concepts through engaging scenarios, role-plays and simulations, thus expanding the boundaries of traditional teaching methods. The data analysis enabled by AI provides tools to identify cultural trends and adapt the curriculum while offering a personalised approach to learning and adapting educational material to the students' specific interests and cultural aspects. The paper also explores the anthropological aspects of AI integration, considering how AI affects language practices, identity and the construction of meaning in professional contexts. In conclusion, the paper presents a vision of higher education that successfully integrates AI to educate specialists who are not only technologically competent but also culturally aware and ready to act in a globalised world. With a comprehensive and interdisciplinary approach that combines technological and sociocultural aspects, the paper proposes models for higher education that will empower students with linguistic competence and cultural adaptability.

Keywords: *artificial intelligence (AI), higher education, cultural competencies, language skills, sociocultural contexts, digital age, personalised learning, anthropological aspects, multicultural environment, pedagogical innovations, intercultural communication, cultural teaching strategies, foreign language teaching*

1. INTRODUCTION

The digital age brings with it not only technological innovations but also the need for a deeper understanding of the cultural changes that drive these innovations. Higher education, as a generator of the future workforce, must, therefore, adapt to new conditions, using artificial intelligence (AI) not only as a tool for more effective teaching but also as a means of improving cultural competence.

Thus, teaching a professional foreign language becomes a space where language skills and cultural awareness meet, where students acquire terminology and learn about the sociocultural contexts in which the language is used. Although discussions about the definition of the term culture are still ongoing, especially among anthropologists, for the purpose of this paper, we will take Oatey's definition (2000:4), according to which culture is "a set of attitudes, beliefs, conventions of behaviour and basic assumptions and values shared by a group of people, and which influence the behaviour of each member and their interpretations of the meaning of other people's behaviour". Language and culture are deeply interconnected. Language is a crucial carrier of cultural values and norms, shaping how people interpret and communicate their world experience. On the other hand, culture shapes language through contextual norms, customs, stories and rituals specific to each community or society. According to Jandt (2003:40), "language is a way of marking cultural identity", which is why language learning is closely related to learning culture. Understanding the cultural context can significantly improve communication skills and enable deeper cross-cultural understanding and connection. Therefore, teaching culture through language teaching is essential for achieving language competence and successful intercultural communication. When learning a new language, learning the culture behind that language helps the learners to better understand the context and specifics of the language, which ultimately leads to more successful communication. AI tools can simulate an actual communication situation, including cultural nuances, thus providing participants with a richer linguistic experience. Virtual assistants based on AI technology enable the exploration of cultural concepts and practices through interactive scenarios, role-plays, and simulations that transcend traditional classrooms. In addition, analysing large amounts of data enabled by AI can help identify and integrate cultural trends and changes into language curricula. AI also allows for a personalised approach to learning, adapting the material to the specific interests of the learner, which may include cultural aspects of the foreign country and the language being studied. On an anthropological level, integrating AI into TFLSP shows how technology shapes human communication and interaction in a professional context. This includes reflection on the impact of AI on language practices, identity and the construction of meaning. In conclusion, integrating AI into higher education and TFLSP brings pedagogical innovations and the opportunity to create culturally aware professionals ready to act in a globally connected world. Through this multidisciplinary approach, higher education can meet the technological and sociocultural challenges of the digital age, shaping future professionals who are linguistically competent and culturally adaptive. This paper deals with the integration of artificial intelligence in teaching culture and the teaching of a foreign language in the context of higher education. With an emphasis on anthropological aspects and the teaching of culture, the paper investigates how the use of AI in TFLSP can prepare students to work in a multicultural and technologically advanced environment. Special attention is paid to how AI can help students understand and appreciate the cultural differences inherent in each language and how they can apply this knowledge in their profession. The paper aims to point out the need for a holistic approach to teaching culture through TFLSP, which enables students to develop intercultural communication and competence. This can be achieved by understanding the anthropological and cultural aspects of the foreign language for specific purposes, studying current AI tools and methods, and developing teaching models that respect cultural aspects. These models should also take into account ethical guidelines and the need for a personalised approach to learning.

2. THEORETICAL FRAMEWORK

The development of e-learning within institutions from the higher education system is a project of exceptional importance for their functioning. By taking advantage of distance learning, the boundaries of education expand both horizontally and vertically.

Through the use of multimedia teaching materials, we horizontally expand and enrich the existing programs. Vertically, we expand the domain of education according to the concept of lifelong learning, as pointed out by Dumancic (2010). A study of contemporary literature indicates a relatively small number of research in the field of e-learning, mainly due to the academic community's insufficient exposure to the dynamics of the business environment controlled by information systems. In addition, recent technological advances and artificial intelligence (AI) technology further highlight the need for more research. Nevertheless, even this relatively small number of studies indicates that the use of information and communication technology (ICT) integrates teachers and students into the digital society, which opens numerous, as yet unexplored, possibilities. E-learning framework development projects will continue using new knowledge brought by ICT and applying existing experiences. The development of new programs and the greater opening of scientific and educational centres to the labour market will encourage the harmonisation of study programs with the needs of the labour market. Information and communication technology has enabled the development of the digital world in which we live today and which affects all aspects of our lives. These changes enabled the creation of new sources of information and innovative learning processes, which were unimaginable until then. These changes affect all of us, both those who teach and those who learn. Accordingly, J.H. Woo and H. Choi (2021) provided a systematic review of AI-based language learning tools developed between 2017 and 2020, identifying trends in the development of these tools and providing detailed information about them. This includes addressing issues related to the effectiveness and application of artificial intelligence in language learning scenarios. Most of these tools use machine learning and natural language processing to identify errors, provide feedback and assess language competence. After using these tools, the participants showed progress in their language skills and knowledge, which points to the need for further development and long-term application to improve the quality of teaching. This was also demonstrated by N. Haristiani (2019), delving into the field of AI chatbots and their application in language learning. Chatbots are computer programs developed using AI technologies that can converse with users, making them valuable resources for practising and improving language skills. Addressing the different categories and functionality of chatbots, ranging from simple ones that can handle fundamental interactions to more sophisticated systems capable of understanding and responding to complex linguistic inputs, Haristiani examines their capabilities for natural language processing, speech pattern recognition, and providing instant and relevant answers in the context of conversation, which is crucial for language learning. On the other hand, in her work "Preparing Teachers for the Application of AI-powered Technologies in Foreign Language Education" (2019), S. Pokrivcakova investigates the application of AI-powered technologies in teaching foreign languages and deals with the changes made in foreign language education, especially with the application of tools powered by artificial intelligence, discussing ICALL (Intelligent Computer Assisted Language Learning) as a subset of CALL (Computer Assisted Language Learning). The paper summarises eight types of AI-powered tools for foreign language teaching and the related results of existing research, however, few there may be, and discusses a framework for effectively preparing foreign language teachers to integrate AI-powered tools into their teaching and make it easier and more effective. Furthermore, Y Xia, SY Shin and JC Kim (2024) developed a "Cross-Cultural Intelligent Language Learning System (CILS)", a system that uses artificial intelligence to improve language learning strategies in cross-cultural situations, as a new approach that integrates artificial intelligence (AI) in language education to improve intercultural communication. CILS uses advanced AI technologies to provide adaptive, personalised learning experiences that cater to the unique language and cultural background of each learner. By dynamically adapting content and methodology, CILS improves linguistic knowledge and cultural understanding, which is necessary for effective global interactions.

An example is platforms like Busuu and HelloTalk, which have influenced significant improvements in the engagement and communication skills of the participants. Also, A. Karakas, in the paper "Breaking Down Barriers With Artificial Intelligence (AI): Cross-Cultural Communication in Foreign Language Education" considers the use of UI technologies in language learning, especially for bridging barriers in intercultural communication. Exploring various case studies and artificial intelligence tools that illustrate the practical use of AI technology in language learning highlights the ability of AI technology to overcome linguistic and cultural barriers in face-to-face and virtual cross-cultural communication. By reviewing platforms such as LinguaConnect, ImmerseMe, and Voki, he showed that these tools offer personalized learning that is adapted to the specific needs of users, facilitate virtual language exchange, and effectively integrate cultural aspects into the language learning process. According to him, the presented case studies indicate that AI technology enables language teachers to teach much more effectively, establish cross-cultural connections and create an inclusive and engaging learning environment. Following that, L. McCallum, in his paper "New takes on developing intercultural communicative competence: using AI tools in telecollaboration task design and task completion" (2023), emphasized the importance of using artificial intelligence tools in the design and implementation of telecollaboration tasks aimed at developing intercultural communication competence. This approach uses AI to create tasks that not only help learners learn a new language but also help them become aware of and understand cultural differences and similarities. Through telecollaboration, participants collaborate with peers from different cultures, which enables them to apply language skills in real-time in an intercultural context, thus facilitating innovative and collaborative learning, and encouraging participants to be active participants in their educational journey, exploring and sharing knowledge with others from different cultures. The transformative potential of AI in enhancing language skills is particularly evident in translation tools. In his paper "The Potential of AI in Facilitating Cross-Cultural Communication through Translation" (2023), M.A.S. Khasawneh presents a robust study involving 110 individuals, including language experts and professional translators. The research findings suggest that AI-based translation technology holds significant promise in the development of cross-cultural communication.

3. EDUCATION AND UPBRINGING

The integral components of a nation's culture are education and upbringing. *Cultus*, *Colere*, in the broadest sense of those words, education and upbringing, are a universal human phenomenon; they are inextricably linked and active. On the other hand, anthropology, generally speaking, is a complete science of man, his nature and culture, so its approach and insights are always current and indispensable both in the scientific and pedagogical processing of education and upbringing and in its application. Thus, appearance (Greek: *morfé*, *haraktér*, *trópos*) means the establishment, composition, creation, and shaping - of man. Education is the spiritual formation of man, his personality, and the cultivation of his self-awareness and social awareness. This is why we say teaching is a complex but unique educational process. Education and upbringing (*paideia*) as a system, in the philosophical and humanistic (not ideological) sense, means that they should be, and are, a kind of *causa sui*, i.e. according to man and people, as well as the measure of man and his sociability conditioned, a whole designed by a philosophical concept, since that man, by his essence and nature, is a social and spiritual being (*zoon politikon*, *ehon logon*), a being of free development, progress (*anth*), creativity and transcendence of his natural and merely empirical givenness (*anatrás-ops*). Pedagogy which pretends to deal with everything referred to as a science is directed towards anthropology as a science of the whole man, that is, to the philosophical discourse about man as a totality and to its understandings and assumptions about the nature, essence and meaning of man's existence and survival.

Humanistic and complete anthropology should, beyond all ideologies, thoroughly theoretically and empirically examine all forms of human natural, spiritual and social, economic, political and cultural activities and achievements. All these givens, activities and accomplishments, of course, do not exist outside the cultural-historical-social framework, but they do not exist outside of man either. They are in man's possession; they are in Croatian man's possession as a collection and continuity of all his positive human achievements, so actual values and goods transcend their time and space; they are, at the same time, beacons and signposts for future generations in their humane and civilised aspirations. This is the general and integral sense of culture in the broadest sense of the word as a universal human phenomenon. By definition, culture is a historical, social category that changes by changes in social conditions, which it influences. Therefore, the definitions of the culture theory have to include, in addition to relatively constant elements of culture, dynamic cultural processes (acculturation, enculturation, innovations), that is, their mutual conditioning and permeation (Valčić and Herceg, 2023).

4. OVERVIEW OF EXISTING AI TECHNOLOGIES THAT SUPPORT LANGUAGE ACQUISITION

We reviewed the modern AI technologies available to students and teachers in the software market, evaluating their practicality and usefulness.

AI technologies currently used in language learning include the following:

Chatbots and Conversational Agents: AI chatbots, like Duolingo, allow users to practice conversing with a machine that simulates human interaction. They use Natural Language Processing to understand and respond to user queries and provide feedback on grammar, pronunciation and vocabulary.

Automatic Speech Recognition allows applications such as Rosetta Stone or Google Translate to recognise and evaluate the user's pronunciation, providing them with feedback and exercises to improve it.

Personalised learning systems, such as learning management systems (LMS) and learning content management systems (LCMS), are designed to cater to the unique needs of each student. They monitor the student's progress and adjust the curriculum based on their needs and learning speed, ensuring that every learner feels valued and catered to.

Recommender Systems analyse participants' interests and abilities and recommend content that is adapted to their goals. This may include articles, books, videos, or games relevant to language learning. These systems, which are usually an integral part of applications, are used by well-known Internet platforms such as Amazon, Deezer, and Netflix.

Automated Evaluation: AI technology automates evaluating student responses, including essays and short answers. Systems such as ETS-rater or Pearson's Intelligent Essay Assessor use NLP to assess language accuracy, content organisation, and writing style.

Immersive¹ Experiences through Virtual and Augmented Reality (VR/AR): VR and AR applications use AI to create immersive language experiences, meaning learners can interactively participate in simulated scenarios that mimic real situations, such as ordering food in a restaurant or asking for directions.

AI tools for learning analytics and predictive analytics (SC et al.) collect data on student learning. This allows students and their teachers to gain detailed insight into progress and areas that require additional attention. These tools can also anticipate potential difficulties and adapt the learning approach.

¹ "In the context of virtual reality, the English word 'immersive' means the generation of a three-dimensional display that seems to surround the user. In the general context, it represents the immersion of a person in an activity in which he is currently participating.", see Kunić, D. (29/10/2023), What does the word "immersive" mean?, at: <https://virtualnastvarnost.net/sto-means-word-immersive/>

Intelligent assistants like Siri, Alexa, or Google Assistant use AI to help users learn languages through interactive dialogues, providing helpful information and translations in real-time. These technologies empower participants to learn the language in a customised, interactive, and dynamic way. They provide tools for independent learning, adaptation to individual needs, and rich feedback and support, fostering an engaging and exciting learning environment.

5. METHODOLOGY

We aim to develop a cultural teaching strategy model that will not only enhance the integration of AI technology into the e-learning process but also harmonise its use with the needs and dynamics of educational and business environments. This model, based on your valuable insights and experiences, will be a significant contribution to the field of language teaching and cultural studies. In order to articulate a scientifically based approach to teaching culture through the TFLSP, the development of such a pedagogical model includes the anthropological settings of cultural learning with the latest achievements in the field of artificial intelligence, whose basic premise is that culture is deeply rooted in language and that its thorough understanding can be achieved only through a contextualised approach that appreciates the complexity of sociolinguistic aspects within the domains of different professions. That is why it is crucial to understand culture as a complex set of symbols, meanings, and practices that are transmitted and adapted within a specific profession. It is also necessary to thoroughly investigate how culture is manifested through language and how intercultural competence can be developed through targeted learning. The next step involves researching and identifying existing AI technologies that can be applied in education, namely natural language processing (NLP) tools, machine learning, predictive analytics algorithms, automated assessment systems, and interactive learning platforms such as chatbots and VR simulation. The conceptual adaptation of the previous steps to the pedagogical context of teaching culture in teaching a foreign language profession includes consideration of the specific needs of students and teachers and how AI technology can support learning and teaching. Anthropological aspects are integrated by creating cultural maps and simulations that imitate real professional scenarios. In doing so, it is necessary to use machine learning algorithms to adjust the material and pace of learning, while content recommendation systems can be used to suggest materials relevant to professional language and cultural learning. Furthermore, learning analytics and automated assessment tools allow for monitoring progress and providing immediate feedback, which is essential for formative evaluation and continuous improvement. It is important to emphasise the collaborative nature of our approach. We envision a close cooperation with language experts and anthropologists, ensuring that AI tools and pedagogical methods align with the curriculum's learning and cultural goals. Their expertise and input in this process are invaluable. Rest assured, the model is designed with flexibility for iterative improvement. The feedback of educators, researchers and professionals will be instrumental in continuously optimising AI tools and learning approaches. This will enable us to respond effectively to the specific needs of teaching culture through foreign languages of the profession, integrating anthropological aspects and advanced AI technologies for more profound, personalised, and dynamic learning.

6. BUILDING A MODEL OF TEACHING CULTURE THROUGH THE TFLSP: PROPOSAL AND DISCUSSION

Based on the above, we constructed a model of the strategy of teaching culture in TFLSP with an emphasis on the anthropological aspects and the use of existing AI technology:

1. ANTHROPOLOGICAL FOUNDATION

Collection of cultural data:

The first step is to analyse large amounts of textual data from various sources such as social media, news articles and professional publications using NLP tools to identify key cultural patterns and values specific to the target profession.

Cultural Maps:

Interactive cultural maps are then developed that use AI to visualise complex cultural concepts, customs, and protocols. These maps enable participants to research and learn about the specific cultures of certain professions.

2. PERSONALISATION AND ADAPTATION

Adaptive learning systems:

This is followed by implementing AI systems that adapt the teaching materials and time the learning according to the participants' cognitive styles and prior knowledge, using machine learning algorithms to optimise the learning process.

Content recommendation:

AI systems recommend content relevant to the professional language and culture, including articles, videos and interactive simulations.

3. INTERACTIVE LEARNING

AI simulations and games:

AI tools create simulations and games that imitate real professional situations, enabling participants to practice language and cultural skills in a safe and controlled environment.

Chatbots for conversation:

This is followed by integrating advanced chatbots that can simulate dialogues within the target profession, allowing participants to practice culturally sensitive communication.

4. EVALUATION AND FEEDBACK

Learning Analytics:

AI learning analytics tools monitor and analyse student engagement and progress in cultural learning, identifying key areas for improvement and personalisation of learning.

Automated grading:

AI systems are applied to automatically assess trainees' tasks and activities and provide immediate feedback on their cultural and linguistic competence.

5. CONTINUOUS IMPROVEMENT

AI tools for trend analysis:

They are used to continuously monitor and analyse new trends and changes in the culture of a particular profession, ensuring that the teaching content is always relevant and up-to-date.

The proposed model emphasises the need for a holistic approach to learning culture that respects the anthropological aspects of language learning. It integrates AI technologies to create a personalised, effective, and interactive experience of learning a foreign language of the profession.

If we were to apply the proposed model in the teaching of Business English, focusing on the culture of the English-speaking area in the context of international business, it would look like this:

1. ANTHROPOLOGICAL FOUNDATION

Collection of cultural data:

Using NLP tools like Open AI's GPT-3, we analyse texts from business magazines, LinkedIn posts and business forums to extract key concepts such as "networking", "leadership", and "negotiation".

Cultural maps:

We create interactive cultural maps using technology such as ArcGIS or the Google Maps API to show geographic differences in business practices and etiquette within the English-speaking world, such as the differences between the United Kingdom and the United States.

2. PERSONALISATION AND ADAPTATION

Adaptive learning systems:

Platforms like Duolingo or Babbel adapt the learning of vocabulary and expressions common in business English, considering previous progress and the participants' learning styles.

Content recommendation:

Using systems like Courser or LinkedIn Learning, participants are recommended articles, videos and real-world cases related to business situations where business English is used.

3. INTERACTIVE LEARNING

AI simulations and games:

Simulations such as those offered by the VirBELA platform or Second Life allow participants to learn in a virtual business environment where they can practice meetings, presentations and networking.

Chatbots for conversation:

We develop chatbots using platforms such as ManyChat or Chatfuel to simulate interaction with potential business partners or clients, allowing participants to practice business English in contextualised dialogues.

4. EVALUATION AND FEEDBACK

Learning Analytics:

Platforms such as Canvas or Moodle monitor student engagement and progress through interactive tasks, providing the teacher with insight into areas that require additional attention.

Automated grading:

Written assignments are graded using tools like Grammarly or Turnitin, focusing on business vocabulary, grammatical accuracy, and cultural appropriateness.

5. CONTINUOUS IMPROVEMENT

AI tools for trend analysis:

Google Trends and BuzzSumo track the latest business trends and news to make content relevant and up-to-date.

Example exercise: BUSINESS NETWORKING SCENARIO

Goal of the exercise:

Understanding and applying business behaviour and networking strategies in business English.

Description of the exercise:

Attendees participate in a virtual networking event using a simulation platform or VR. Each participant is given an imagined business identity and tasked with establishing contacts with characters generated using AI tools.

Activities:

Preparation (Content Recommendation):

Attendees review video materials and articles on effective networking.

Task execution (AI simulations and games):

Attendees enter a simulated networking session where they practice an elevator pitch, exchange business cards and lay the foundation for future business relationships.

Evaluation (Learning Analytics):

Through learning analytics, teachers receive data on how effectively the participants communicated and how successfully they established contacts.

Feedback (Automated assessment):

Participants receive automatic feedback on their language performance, cultural appropriateness and effectiveness of communication strategies.

Review and discussion (Chatbots for conversation):

After the exercise, participants use chatbots to review and discuss their experiences and ways they can improve their language and communication skills.

With this approach, participants develop language skills and gain a practical understanding of the cultural aspects of business English, which is crucial for success in an international business environment.

Although the proposed model of culture teaching strategy in TFLSP that uses AI technology offers many advantages, some possible difficulties and shortcomings may arise during its application:

- 1) Technical limitations and challenges: A quality technological infrastructure is needed to support AI tools. Schools or institutions with limited resources may need to support this model adequately. Furthermore, integrating different AI tools can be complex and require technical knowledge that may only be available to some teachers or institutions. At the same time, AI algorithms can lead to wrong interpretations or recommendations, confusing students and affecting learning quality.
- 2) Content and Pedagogy Issues: AI may only sometimes successfully identify or provide culturally and contextually relevant materials. Also, AI systems often propose generalised content that does not consider the specifics of individual cultures or professions and provides superficial information that needs to be more comprehensive for a deep understanding of complex cultural concepts.
- 3) Personal and emotional aspects: Learning with AI tools can reduce the personal interaction and mentoring teachers provide, essential for social and emotional learning. This can leave students feeling isolated or less motivated.
- 4) Legal and ethical issues: Collecting and analysing students' data through AI tools can violate their privacy, and AI technology may not be equally accessible to everyone, leading to inequality in access to education.
- 5) Professional development: Teachers will need additional training to use AI tools effectively, which can be time-consuming and financially demanding.

To overcome these difficulties, a thorough assessment of technological capacities and pedagogical methods must be carried out before the model is implemented. It is also important to ensure the continuous professional development of teachers and the development of ethical guidelines and privacy protection policies for students and teachers.

7. CONCLUDING REMARKS

Based on the presented facts and research, digital transformation and artificial intelligence play a vital role in revolutionising educational practices, especially in the context of professional foreign language teaching. Integrating AI into pedagogical processes enriches students' language experience through the simulation of real communication situations and cultural nuances and improves the cultural competencies necessary for successful intercultural communication in a globalised world. AI is indispensable, considering the need for continuous curriculum adaptation according to dynamic sociocultural changes and market demands. It provides opportunities for personalised learning, enables innovative teaching methods and offers more profound insights into the anthropological aspects of language.

Through a multidisciplinary approach that includes language experts, anthropologists and technological innovators, it is possible to develop models of higher education that will train students to understand the complexity of linguistic and cultural diversity. Finally, this paper indicates that a holistic approach to learning culture through teaching a professional foreign language is essential for developing intercultural communication and competence. The challenges of the digital age require us to be creative, innovative and adaptable. The successful integration of AI into educational processes is a step forward in pedagogical innovations and the basis for building culturally aware and adaptable professionals ready for the challenges of the modern multicultural environment. In light of the proposed model of teaching culture through the teaching of a foreign language of the profession, it can be concluded that artificial intelligence has the potential to significantly enrich and personalise learning, providing students with a rich interactive experience that is adapted to their individual needs and professional goals. By going through a phase of anthropological research, content personalisation, interactive learning, and continuous evaluation and feedback, students can gain a deep and comprehensive understanding of the cultural aspects of the language they are learning. However, implementing this model presents challenges in terms of technical feasibility, pedagogical effectiveness, emotional and social aspects of learning, and legal and ethical issues. Therefore, it is necessary to carry out a detailed assessment of educational institutions' resources and needs and develop clear guidelines for using and integrating AI tools for educational purposes. Despite these challenges, integrating artificial intelligence into foreign language teaching remains a promising approach that can significantly improve students' linguistic and cultural competence. This model can provide participants with the key skills needed to succeed in an increasingly globalised and multicultural work environment through constant adaptation and awareness of new trends. Collaboration between educators, technological experts, and students is paramount for the successful implementation of AI tools in foreign language teaching. Equally crucial is the continuous professional development of teachers in AI technologies. Moreover, ethical considerations must be at the forefront, ensuring the responsible application of AI, protecting participants' rights and privacy, and ensuring equal access to high-quality education. This approach harnesses the full potential of AI, creating a dynamic and adaptive educational experience that prepares students for the challenges of the modern age. Therefore, we continue developing and implementing AI tools in foreign language teaching, constantly reflecting on their ethical, cultural, and linguistic implications to fully exploit their potential for enriching and improving cultural education.

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THE STEALTH LEADERS: UNVEILING THE COMPETITIVE EDGE OF CROATIAN HIDDEN CHAMPIONS

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ABSTRACT

Hidden Champions, a concept introduced by Hermann Simon, refer to small and medium-sized enterprises (SMEs) that dominate niche markets globally while remaining largely unknown to the public. These firms thrive on strategic leadership, ambitious goals, and a relentless focus on innovation. This article explores the unique qualities that drive Hidden Champions to success, highlighting the critical role of visionary leadership. By fostering a high-performance culture, prioritizing customer relationships, and maintaining a commitment to excellence, these companies achieve sustained market leadership and competitive advantage. Through case studies of SATO Ltd. and Croatian Umbrella Ltd., the article demonstrates how strategic investments, technological advancements, and strong leadership underpin the success of these exemplary SMEs.

Keywords: *Leadership, Hidden Champions, SME's*

1. INTRODUCTION

The modern VUCA world is characterized by unpredictability, instability and continuous disruption, as particularly highlighted by the relatively recent COVID-19 pandemic and the attack on Ukraine. This business environment is in constant flux, and it poses significant challenges for businesses globally. It also underscores the resilience and strategic advantages of Hidden Champions. These small to mid-sized companies, often market leaders in niche sectors, have demonstrated an exceptional ability to navigate turbulent times. During the COVID-19 pandemic, many businesses faced unprecedented disruptions. Supply chains were strained, demand patterns shifted dramatically, and operational continuity was threatened. However, Hidden Champions, with their deep focus on innovation, visionary management, and market leadership, managed to adapt swiftly. Their emphasis on long-term goals over short-term gains allowed them to invest in digital transformation and agile practices, ensuring they could maintain their competitive edge and continue serving their specialized markets effectively. Similarly, the Russian attack on Ukraine has introduced further geopolitical risks and economic uncertainties. Energy prices, supply chain reliability, and market access have all been affected. Hidden Champions, characterized by their global yet decentralized operations, have shown a remarkable ability to pivot and reconfigure their strategies to mitigate these risks. Relevant research indicates that hidden champions thrive despite various challenges, such as lacking support (Berberović et al., 2019), facing economic downturns or financial crises (Balas

Rant and Korenjak Černje, 2017), and operating in established, unchanging business environments (Muñoz et al., 2017). Their size and visibility, coupled with strong leadership, enable them to make decisive moves more quickly than larger conglomerates, securing alternative suppliers, and entering new markets to offset losses. Hidden Champions, a term coined by Hermann Simon, describes small to medium-sized enterprises (hereafter SMEs) that achieve world market leadership in their niche sectors while remaining relatively unknown to the general public (Simon, 1996). They achieve top global or regional market positions by remaining highly focused and proactive, often in obscure niche sectors, keeping their revenues below 4 billion USD (Simon, 2009). These companies excel through strategic leadership, ambitious goals, and a focus on excellence and innovation. The concept underscores the unique success model of these companies, which are characterized by their market leadership, size, and low public visibility (Simon, 1996). Hidden Champions receive significant attention for their business acumen and ability to retain specialized workforces in predominantly rural areas (Gohl, Keir and Moosmayer, 2024). They tailor technologically demanding and knowledge-intensive products, mostly in B2B markets (Schenkenhofer, 2022). Hidden champions are companies whose market dominance belies their low profiles (Lei and Wc, 2022). Simon's research identified that these companies often dominate their markets globally, holding significant market shares and excelling through strategic, customer-focused approaches (Simon, 2009). Leadership in Hidden Champions plays a pivotal role in shaping their competitive advantage, guiding them through the complexities of market dynamics, and ensuring sustained success.

Hidden Champions, as illustrated in Figure 1, distinguish themselves through several core characteristics that are crucial for their sustained success and competitive edge. Understanding these characteristics helps in comprehending how these firms achieve market dominance and thrive in their specific niches despite their relatively low public profiles. Here are the primary attributes that set Hidden Champions apart:

- 1) **Market Leadership:** Hidden Champions dominate their specific niche markets, often being the top three globally or the number one in their continent. They are typically the top one or two firms in their niche markets globally, often holding market shares exceeding 50% (Simon, 2009; Simon, 2018; Greeven, Yip, and Wei, 2019). Despite their substantial market presence, they generally have less than 5 billion euros in revenue and maintain a low public profile (Simon, 2018, p. 5-6).
- 2) **Size and Visibility:** These companies are small to medium in size, generally with turnovers not exceeding three billion euros, and they maintain a low public profile (Simon, 2009; Simon, 2018; Greeven et al., 2019). They play a crucial role in their countries' export success. In Germany, for example, about two-thirds of exports are from mid-sized companies, including many Hidden Champions (Simon, 2018, p. 4).
- 3) **Focus and Innovation:** Hidden Champions maintain a sharp focus on their core competencies and invest heavily in innovation and continuous improvement (Simon, 2009; Simon, 2018; Greeven et al., 2019). They have a deep focus on their chosen markets and often maintain high levels of vertical integration, meaning they perform many steps of production internally to maintain quality and protect know-how (Simon, 2018, p. 8-9). Innovation is a core part of their strategy, with a strong emphasis on research and development (R&D). They invest significantly in R&D, often more than twice the average rate in their industry, and have high patent activity (Simon, 2018, p. 12-13).
- 4) **Strong Leadership:** Leaders in Hidden Champions play a crucial role in setting ambitious goals, fostering high performance, and navigating complex market dynamics. Among other things, leaders prioritize decentralization and employee engagement (Simon, 2009).

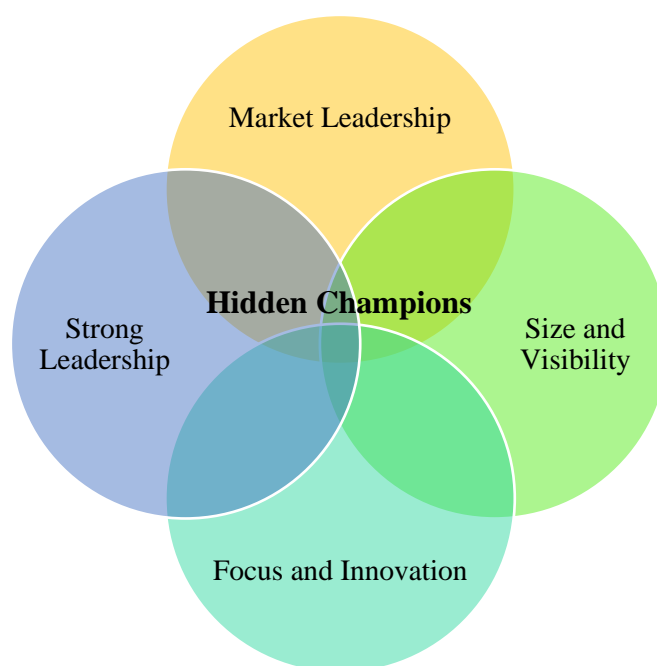


Figure 1: Key Factors for Hidden Champions' Success

Hidden Champions benefit from a deep understanding of their markets and a close relationship with their customers (Simon, 2009). Leaders emphasize customer-centric strategies, which involve meticulous attention to customer needs and preferences, enabling these companies to deliver superior value (Neubauer, 2011). This customer intimacy, combined with a commitment to innovation, allows Hidden Champions to differentiate themselves from competitors and secure a loyal customer base. The focus and innovation inherent in Hidden Champions allow them to thrive even amidst instability. Almost by definition, these companies invest heavily in research and development, continually advancing their product offerings and improving their processes. This relentless innovation not only differentiates them from competitors but also builds robust buffers against market volatility. They are often less reliant on mass markets and more dependent on specialized, high-value customers, which provides a more stable revenue base in uncertain times. Hidden Champions are crucial to modern, knowledge-based economies, serving as a significant source of new jobs, radical innovations, and productivity growth (Mietzner, Proelss, and Schweizer, 2018). As mentioned, one of key ingredients of Hidden Champions' success lies in the visionary leadership that drives these companies. Leaders in these firms set ambitious goals and foster a culture of high performance and continuous improvement (Neubauer, 2011). They prioritize decentralization, allowing for agile decision-making and responsiveness to market changes. This leadership approach ensures that employees at all levels are engaged, motivated, and aligned with the company's strategic objectives, enhancing overall productivity and innovation (Neubauer, 2011). Moreover, the role of leadership in fostering a strong organizational culture cannot be overstated. Hidden Champions often maintain a family-owned or closely held structure, which contributes to a stable and cohesive organizational environment (Neubauer, 2011). Leaders in these companies cultivate a culture of trust, transparency, and mutual respect, which not only enhances employee satisfaction but also drives collective efforts towards achieving the company's purpose. Despite their push for globalization, hidden champions usually have simple organizational structures, which makes it easier for them to execute their strategies (Audretsch et al., 2018). Additionally, the market positioning of Hidden Champions is subjectively defined by leaders to create a high level of business attractiveness (Balas Rant and Korenčak Černe, 2017). In 2009, a list of hidden champions was compiled, encompassing around 2,000 companies worldwide.

Of these, 1,174 were in Germany, 61 in Austria, and 81 in Switzerland, totalling 1,316 in German-speaking countries (Simon, 2009, p. 28). According to research by Nestian and Voda (2019), updated in a survey presented at the EBRD international conference in October 2019 in London, Poland has the highest number of hidden champions (11), followed by Belarus (10), Serbia (10), and Slovenia (10). The most potential hidden champions were identified in Albania (4), Estonia (4), and Moldova (4). Among the 105 hidden champions, 45 were identified in the initial 2011 study, and 60 are newly identified. Additionally, out of the 40 potential hidden champions, 7 were from the initial study, and 33 are new. These hidden champions are likely to emerge in five industries: Manufacturing (26), Information and Communication (9), Professional, Scientific, and Technical Activities (3), Agriculture, Forestry, and Fishing (1), and Financial and Insurance Activities (1) (Nestian and Voda, 2019). Since the early 2000s, most hidden champions have pursued competitive growth strategies successfully, maintaining or even improving their leading market positions. Simon (2018) argues that this superior performance provides them with the necessary resources to continue growing. Existing research shows that hidden champions are highly successful and innovative. Rammer and Spielkamp (2019) found that these companies are more likely to engage in innovation activities and have a significantly higher share of revenues from innovations. SMEs have average annual revenue growth rates that allow them to double their output every seven to eight years, resulting in a constant demand for new employees. Despite competing in global markets, they still manage to maintain high profitability (Simon, 2009; Audretsch et al., 2018; Block, 2018).

2. LEADERSHIP EXCELLENCE: DRIVING SUCCESS IN HIDDEN CHAMPIONS

The competitive advantage of Hidden Champions is largely attributed to their exceptional leadership. Sutherland and Purg (2013:33) concluded that throughout the cases of Hidden Champions, leadership was a central and important driver of organizational success. By setting ambitious goals, fostering a high-performance culture, maintaining close customer relationships, and nurturing a strong organizational culture, leaders in these companies create a foundation for sustained success and market leadership in their respective niches. The leaders of the Hidden Champions must become true global citizens (Simon, 2022). In times of uncertainty, managers and leaders play a vital role in keeping businesses running smoothly, giving them a competitive edge. The success of various organizations is crucial for society's overall economic and social well-being. Effective management and leadership skills are essential for organizational prosperity, and it's important to nurture these capabilities (Burgoyne et al., 2004). SMEs are a significant part of the business landscape, contributing greatly to the economy. They play a substantial role in most countries' gross domestic product, influencing both wealth creation and economic growth (Alberti et al., 2018). Effective leadership is crucial for the success and resilience of SMEs, especially during times of crisis. SMEs often face unique challenges, such as limited resources and weaker market positions, making strong leadership even more vital (Durst and Henschel, 2021). For example, during the COVID-19 pandemic, many SMEs around the world took a number of steps to survive and recover (Hu and Kee, 2022). Leaders in SMEs must exhibit a range of competencies, including strategic thinking, adaptability, and emotional intelligence, to navigate through turbulent times and ensure business continuity. As defined by Grabowska and Saniuk (2023) leadership competence refers to the willingness of the board of directors to harness the potential of the latest trends and technologies to keep the company competitive and efficient. Management should possess a comprehensive understanding of the latest concepts, trends, and technologies. This expertise enables them to independently implement innovative solutions within key business areas, enhancing overall performance. In complementary areas, management should leverage an integrated network of external partners to maximize effectiveness.

By staying informed about cutting-edge developments, management can continuously improve multiple aspects of the business and drive future initiatives. Leadership in SMEs involves more than just managing day-to-day operations; it requires the ability to foresee potential crises, develop contingency plans, and motivate the team to adapt to changing circumstances. The effectiveness of a leader is often reflected in their ability to maintain a positive organizational culture, which fosters trust, resilience, and proactive problem-solving among employees. By building strong relationships and encouraging open communication, leaders can create a supportive environment that enables the organization to weather crises more effectively (Durst and Henschel, 2021). Employing digital technologies helps SMEs become more resilient by improving their ability to handle business interruptions (Khalil et al., 2022).

3. INNOVATION AND EXPANSION: THE SUCCESS STORY OF SATO

SATO Ltd., founded in 2008 and based in Zabok, Croatia, has rapidly risen to prominence in the graphic and printing industry. Located at Vodovodna ulica 2, HR-49210 Zabok, the company has become a hallmark of reliability and excellence in printing solutions, specializing in the production of high-quality self-adhesive labels. SATO's journey from a modest beginning to a market leader is marked by strategic decisions, technological advancements, and a relentless commitment to customer satisfaction.

3.1. Company Overview

The company's early years focused on coordinating between producers and customers. However, in 2011, SATO made a strategic pivot to start its own label production line, driven by the growing market demand for high-quality labels and tight production deadlines. Within just three years, SATO's astute observation of market trends and the increasing demand for top-quality labels prompted this strategic move. This shift proved pivotal, positioning SATO as a key player in the Croatian printing industry. Today, SATO stands as one of the foremost companies in the Croatian graphic industry and has earned a reputation as one of the region's most dependable printing houses for self-adhesive labels. What sets SATO apart from its competitors is its unwavering commitment to meeting tight deadlines and adapting to evolving requirements. They understand the importance of establishing mutually beneficial relationships with their clients, and they prioritize customer satisfaction above all else. This dedication to quality and reliability has solidified SATO's market position, making it a trusted name in the industry. Currently, SATO holds an estimated market share of 25%, underscoring its dominance.

3.2. SATO's success factors

The success of SATO Ltd. can be attributed to a combination of key leadership factors that have propelled the company to new heights. At the forefront is the presence of a strong leadership personality, embodied by a leader Ratko Habus, SATO's CEO, who is deeply dedicated and passionate about the company's success. The leader's personal journey, filled with struggles and triumphs, serves as a powerful source of inspiration for the team, showing them that success is attainable through perseverance and unwavering focus. SATO's philosophy places a strong emphasis on the importance of social capital for the company's success. The leader recognizes the value of fostering strong connections with employees, realizing that a sense of cohesion and teamwork is essential for achieving collective goals. By building relationships based on trust, respect, and open communication, the leader ensures that every team member feels valued and motivated to contribute their best efforts. This focus on social capital creates a positive work environment where collaboration thrives, and individual talents are harnessed effectively. Future-oriented thinking is another hallmark of SATO's leadership. The leader possesses a proactive mindset, always seeking opportunities for growth and improvement.

By staying ahead of industry trends and anticipating customer needs, SATO can adapt its strategies and offerings, accordingly, positioning the company for long-term success. The leader's expert knowledge in the field provides a solid foundation for decision-making, enabling them to navigate challenges and make informed choices that drive the company forward. The leader's courage and boldness are also instrumental in the company's achievements. They are unafraid to take calculated risks and explore innovative solutions, pushing boundaries and challenging the status quo. This fearlessness creates an environment that encourages experimentation and fosters a culture of continuous improvement and innovation. It empowers employees to think creatively and embrace new ideas, resulting in groundbreaking solutions and a competitive edge in the market. In summary, SATO's success can be attributed to a combination of crucial leadership factors. The strong leadership personality of the company's leader, along with their dedication and passion, sets the tone for the entire organization. The leader's personal journey and focus on social capital foster a sense of cohesion and teamwork among employees. Future-oriented thinking, proactivity, expert knowledge, and the leader's courage and boldness all contribute to the company's remarkable achievements. With these leadership factors in place, SATO remains well-positioned to continue its trajectory of success and innovation in the graphic industry.

3.3. SATO's Strategic Initiatives

One of the critical factors behind SATO's success is its significant investment in advanced printing technologies. The company's machine park features state-of-the-art digital, flexographic, and offset printing machines. These technologies enable SATO to offer a broad spectrum of printing services, including UV varnishing, foil stamping, embossing, screen printing, and lamination. Regular upgrades to their equipment ensure that SATO remains at the forefront of technological advancements, delivering top-notch quality and precision in every product. Their round-the-clock availability and cutting-edge technology ensure the production of top-quality labels, meeting the dynamic and time-sensitive needs of businesses. Under the strategic vision and leadership, the company has executed several key acquisitions and expansions to bolster its market presence. Habus's leadership has been instrumental in identifying and capitalizing on strategic opportunities. By acquiring companies such as Etigraf, Grafpex, and Birotehnik in Croatia and Kiro Dandaro in Macedonia, SATO has significantly expanded its production capacity and customer base. These acquisitions have allowed the company to integrate new technologies and expertise, enhancing its market reach and production capabilities. This horizontal integration, particularly in Macedonia, has allowed SATO to cater to a broader range of customer needs, with approximately 60-70% of their customers requiring both labels and flexible packaging. Establishing SATO Etiketten GmbH in Ulm, Germany, marks a significant step towards penetrating the German, Austrian, and Benelux markets.

3.4. SATO's Future Outlook

Financially, SATO has demonstrated impressive growth. The company's sales revenues surged from €3,296,996.88 in 2012 to €18,630,008.76 in 2022. This growth trajectory is a testament to SATO's effective financial management and strategic market expansion. The company's financial health is also reflected in its robust Return on Assets (ROA) of 15.09% and Return on Equity (ROE) of 34.76% in 2022. Looking to the future, SATO aims to further enhance its capabilities by leveraging advanced printing technologies and expanding its export activities. The company has set ambitious goals to increase its export share to 50% of its turnover. Establishing SATO Etiketten GmbH in Germany is a strategic move to get closer to potential customers in key European markets.

SATO's strategic focus on innovation, market expansion, and maintaining high-quality standards positions it well for continued success and growth in the global market. Their commitment to leveraging advanced technologies and expanding their offerings ensures that SATO will remain a reliable partner in the printing industry.

4. REIGNING OVER EUROPE: THE SUCCESS STORY OF CROATIAN UMBRELLA

Croatian Umbrella Ltd. (Hrvatski kišobran d.o.o.), established in 1990 and headquartered in Zaprešić, Croatia, has carved out a distinctive niche in the umbrella manufacturing industry. The company is celebrated for its high-quality, aesthetically pleasing umbrellas that combine traditional craftsmanship with contemporary design. This unique blend has solidified Croatian Umbrella's position as the sole mass producer of umbrellas within the European Union, and possibly the only one outside of China. The company's commitment to excellence and customer satisfaction has earned it a significant market presence and a loyal customer base.

4.1. Company Overview

Croatian Umbrella began its journey in 1990, initially focusing on retail and wholesale operations. However, in 2010, the company transitioned into production, driven by a vision to create high-quality umbrellas that blend traditional craftsmanship with modern design. This strategic shift allowed Croatian Umbrella to control the quality and design of its products more effectively, setting the stage for its growth and market leadership. Today, Croatian Umbrella is recognized as a leading player in the European umbrella industry. Holding an impressive 40% market share in Croatia, the company commands a significant presence in the domestic market. Despite a relatively small market share of 0.05% in Europe, Croatian Umbrella's status as the only mass producer of umbrellas on the continent gives it a substantial competitive advantage. The company's reputation for quality and innovation, coupled with its commitment to customer satisfaction, has solidified its position as a trusted provider of high-quality umbrellas.

4.2. Croatian Umbrella's Success Factors

The success of Croatian umbrella can be attributed to a multitude of factors that work in synergy to propel the company forward. At its core, the company's cherished values, such as integrity, quality, and customer-centricity, form the foundation of its operations and guide decision-making at all levels. The vision and perseverance of the owner Marin Rogić have played a crucial role in driving the company's growth and instilling a sense of purpose among employees. The dedication and motivation of the team members are evident in their commitment to delivering exceptional products and services. Moreover, the strong brand image cultivated by the Croatian umbrella resonates with customers, fostering trust and loyalty. The company's adherence to fair business practices, ethical conduct, and transparency further solidifies its reputation as a trustworthy partner. In addition, Croatian umbrella's ability to identify and seize opportunities and its flexibility in adapting to changing market dynamics has been instrumental in staying ahead of the competition. Continuous learning and improvement are deeply ingrained in the company's culture, ensuring it remains agile and responsive to customer needs. By staying attuned to market trends and consumer preferences, Croatian umbrella has consistently introduced innovative designs and materials, captivating the market with its forward-thinking approach. Creating a positive work environment that fosters creativity, collaboration, and employee well-being has also contributed to the company's success, fostering a sense of pride and loyalty among the team. Furthermore, the Croatian umbrella recognizes the importance of environmental sustainability and has taken proactive steps to address these concerns, such as utilizing new ecological materials and adopting eco-friendly production practices. Croatian umbrella has achieved a strong market position and sustained success in the umbrella industry by embracing these strengths and continually leveraging them.

4.3. Croatian Umbrella's Strategic Initiatives

One of the critical factors behind Croatian Umbrella's success is its significant investment in advanced manufacturing technologies. The company has consistently upgraded its machinery and production processes to enhance efficiency and product quality. This commitment to technological advancement has enabled Croatian Umbrella to streamline operations, reduce production times, and maintain high standards across its product range. Marin Rogić's visionary leadership has been pivotal in driving the company's growth through strategic investments and expansions. Croatian Umbrella has broadened its target group and increased its employee base, which stood at 45 employees in 2022, only slightly up from 44 in 2019. Despite the almost unchanged number of employees, the company has achieved remarkable financial growth, with sales revenues rising to €2,945,204.33 in 2022. This improvement in financial performance is a testament to the company's proactive approach to exploring new markets and expanding its reach. These strategic initiatives, combined with a focus on innovation and adaptability, have positioned Croatian Umbrella well for future success.

4.4. Croatian Umbrella's Future Outlook

Financially, the company has shown consistent growth, with sales revenues increasing from €492,667.33 in 2011 to €2,945,204.33 in 2022. The company's financial health is further highlighted by its ROA of 0.18% and ROE of 0.24% in 2022. Looking ahead, Croatian Umbrella aims to continue its trajectory of growth by leveraging its competitive advantages and exploring new market opportunities. The company is committed to enhancing its marketing efforts by recruiting PR and marketing professionals to strengthen its brand presence both domestically and internationally. By embracing innovation, investing in technology, and maintaining its commitment to quality, Croatian Umbrella is well-positioned to sustain its competitive edge and drive future growth. The company's proactive approach to addressing potential challenges and its focus on continuous improvement ensure that it remains resilient and adaptable in a rapidly evolving market.

5. CONCLUSION

The role of leadership in SMEs is multifaceted and critical. Leaders must not only guide their organizations through immediate challenges but also lay the groundwork for future resilience and growth. This involves a combination of strategic planning, fostering a positive organizational culture, and investing in the continuous development of both the leader and their team. Such comprehensive leadership ensures that SMEs can adapt, survive, and thrive even in the most challenging times. SATO Ltd. epitomizes the qualities of a Hidden Champion. Through innovation, strategic investments, and an unwavering commitment to customer satisfaction, SATO has established itself as a market leader in the graphic and printing industry. The company's ability to adapt to market trends, invest in advanced technologies, and maintain strong leadership has solidified its position and ensures its ongoing success. As SATO continues to expand and innovate, it remains well-equipped to sustain its competitive edge and drive future growth. Ratko Habus's leadership has been instrumental in SATO's ascent to market leadership, characterized by his strategic vision, financial literacy, and commitment to innovation. His courage to take calculated risks and explore innovative solutions has created a culture of continuous improvement and adaptability within the organization. By championing leadership qualities, Habus has positioned SATO to thrive in a competitive market, ensuring sustained growth and success. Croatian Umbrella Ltd. exemplifies the qualities of a Hidden Champion. Through strategic leadership, technological innovation, and a steadfast commitment to quality and customer satisfaction, the company has established itself as a market leader in the umbrella industry. As Croatian Umbrella continues to expand and innovate, it remains well-equipped to maintain its market leadership and achieve sustained success.

Marin Rogić's leadership has been a cornerstone of Croatian Umbrella's success, driving the company forward through a combination of strategic vision, adaptability, and a strong commitment to core values. Rogić's ability to forecast market trends and customer needs has allowed the company to stay ahead of the competition and continuously innovate. Also, by integrating sustainable practices and promoting eco-friendly production, Rogić ensures that the company not only meets current market demands but also paves the way for a more sustainable future. Under his guidance, Croatian Umbrella has achieved remarkable financial growth and maintained a strong market position, despite facing various challenges.

The findings from this study highlight several practical implications for other SMEs striving for success in competitive markets:

- 1) **Strong Leadership:** Effective leadership is crucial in setting ambitious goals, navigating market complexities, and driving organizational success. Leaders should focus on decentralization, employee engagement, and developing a high-performance culture.
- 2) **Emphasizing Innovation:** SMEs should prioritize continuous innovation and invest in research and development to stay ahead of market trends and maintain a competitive edge. By fostering a culture of innovation, companies can develop unique products and services that meet evolving customer needs.
- 3) **Customer-Centric Strategies:** Building close relationships with customers and understanding their needs can lead to superior value delivery and customer loyalty. SMEs should adopt customer-centric approaches to differentiate themselves from competitors.
- 4) **Focus on Core Competencies:** Maintaining a sharp focus on core competencies and achieving high levels of vertical integration can help SMEs control quality, protect know-how, and optimize production processes.
- 5) **Global Mindset:** While maintaining strong local roots, SMEs should also adopt a global perspective, exploring new markets and leveraging international opportunities for growth.

By implementing these insights and focusing on these areas, SMEs can better position themselves for sustained growth and success in an increasingly complex and competitive global market. The path forward is clear: by fostering strong leadership, embracing innovation, and maintaining a customer-centric approach, SMEs can not only survive but thrive, driving economic growth and setting new standards of excellence in their respective industries. The journey of Hidden Champions like SATO Ltd. and Croatian Umbrella Ltd. serves as an inspiring roadmap, demonstrating that with vision, dedication, and strategic acumen, even the smallest companies can achieve greatness and leave a lasting impact on the global stage.

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SOCIAL NETWORKS ACTIVITIES OF YOUNG PEOPLE AND ITS IMPACT ON CYBERCRIME IN THE REPUBLIC OF CROATIA

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ABSTRACT

The paper examines the connection between the activities of young people on social networks and copyright abuse and computer fraud in the Republic of Croatia. The conducted research showed the existence of a connection between the mentioned variables, that is, frequent use of social networks by young people is associated with computer fraud and especially dishonesty when it comes to copyright infringement, which corresponds to similar research in the world. Granger causality test confirmed mutual causality between variables. The Johansen cointegration test confirmed a long-term connection between Internet access and computer fraud, as well as between Internet access and copyright abuse.

Keywords: youth, social networks, cybercriminal, Croatia

1. INTRODUCTION

In the last few years, the issue of cyber security, and the related issue of cyber crime, has become one of the most important issues, especially with the adoption of the new Act on Cyber Security (Official Gazette 14/24) from February 2024, which further expands the scope of application in the sector to which applies and which, in addition to its by-laws relating to the area, will prescribe specific measures to protect against cybercrime and increase cyber security by October 17 of this year. In this sense, this article investigates the role of young people (16-29 years old) in the risks of cyber security, and the aim of the research is to examine the extent to which young people and their activity on the Internet increase the risk of cyber crime.

In the context of the above, the following hypothesis was put forward:

- H: The activity of young people on the Internet and social networks affects computer fraud and copyright abuse

The research of the mentioned group was undertaken due to the expected high level of IT literacy among young people, which is why it was necessary to examine whether their internet skills are on average significantly higher than any other age group, which increases their ability to master the aforementioned knowledge and consequently influence cybercrime.

2. LITERATURE REVIEW

Recent research in various segments shows the recognition of the connection between the activities of young people on social networks and the increase in the number of unethical behavior on the Internet, which in a certain part also enters the domain of criminal responsibility. Young people are often aware of unethical behavior on social networks, however: "...it appears as if there is no collaborative approach for best practices in computer security and training on cyber ethical behaviour" (Masenya, 2023) where the most frequent form of unethical behavior is among young people "copying homework and cheating teachers" (Erazo-Arteaga, 2023). On the other hand, from the criminal-legal side, research conducted this year at a university (Balogun, 2024) showed that students acknowledged the prevalence of

Internet crime within their group, but also the presence of a number of factors that contribute to the prevalence of Internet crime, such as: *"encompassing financial mismanagement, expulsion from educational institutions, societal stigma, loss of personal integrity, legal consequences, and limited access to future opportunities"*. At the same time, in terms of cybercrime prevention, *"the role of dialogues with young people and students in universities in order to clarify the ambiguous concepts concerning cybercrime and social media for them to be aware of them"* (Alsharif, 2024) is highlighted, as well as the fact that *"the older millennials in their 30s had a much better phishing awareness than the younger generations, i.e., the 20s and the teenagers"* (Pratama, 2023). In terms of cybercrime among young people, casual gamers are at the greatest risk, and according to research on *"162 online gamers from Facebook, Discord, Twitter, and Twitch discovered that 55% of respondents carelessly keep their gaming account password and more than 56% of respondents' gaming PCs are not antivirus-protected"* which is exploited by cybercriminals but which also indicates an increase in the risk of cybercrime among young people not only in the role of perpetrators but also as victims of cybercriminal

3. RESEARCH AND METHODOLOGY

Data on the activities of young people on social networks in the Republic of Croatia was collected by the Croatian Bureau of Statistics targeting young people aged 16 to 29 for the period from 2014 to 2023.

Variable	Description	Source
CF	computer fraud	Statistical reviews of basic security indicators and work results of the Ministry of the Interior of the Republic of Croatia
CA	copyright abuse	Statistical reviews of basic security indicators and work results of the Ministry of the Interior of the Republic of Croatia
FIU	frequency of use	Croatian Bureau of Statistics
IA	internet acces	Croatian Bureau of Statistics

Table 1.: Variable sources
 (Source: authors)

The respondents used the Internet for at least three months, on average at least once a week. The term "activity" of young people includes participation in social networks (creating a user profile, using Twitter, Facebook or other social networks), viewing portals and daily newspapers, or online educational activities of any kind. Data on cybercrime (reported crimes) were collected from the Statistical reviews of basic security indicators and work results of the Ministry of the Interior of the Republic of Croatia. In this paper following variables were observed - computer fraud in terms of Art. 271. paragraph 1 of Criminal law: *"...act which is carried out with the aim of obtaining an illegal property benefit for oneself or another, enters, changes, deletes, damages, makes unusable or inaccessible computer data or interferes with the operation of the computer system and thus causes damage to another"*; copyright abuse, frequency of internet use and internet acces.

3.1. Methodology, results and discussion

An ADF test was performed for the collected data and tests showed the following results:

Table following on the next page

Variable	level	level	1 st difference	1 st difference	2 nd difference	2 nd difference
	statistic	probability	statistic	probability	statistic	probability
CF - computer fraud	-2.09265	0,2503	-3.78730	0,027		
CA- copyright abuse	-3.10727	0,066	-377724	0,032		
FIU - frequency of use	-4.44451	0,009				
IA - internet acces	-2.92511	0,0845	-1.81572	0,3456	-7.60892	0,0007

Table 2.: ADF test results
 (Source: authors)

The unit root test, showed that the variable "frequency of use" is stationary in level, that is, that the variables computer fraud and copyright abuse are stationary in the 1st difference. The Internet access variable is substationary in the 2nd difference. After the ADF test was performed, causality was tested using the Granger Causality test method. The Granger test examines whether one variable is statistically significant and offers information about other variables, with the existence of a time delay (Biškupec, Herman; 2021). The Granger causality test (Granger, 1969) verifies whether the variable internet access and frequency of use causes other variables that personate cybercrime. The Granger test was used to determine the causality of the variables shown in Table 2. and check whether past and present values (internet acces and frequency of Internet use) help in predicting the level of cybercrime. Granger causality test refers to variables: Internet access (IA), Frequency of Internet use (FIU), Copyright abuse (CA) and Computer fraud (CF), which are shown in the following relations:

$$IA_t = \sum_{j=1}^n \alpha_j IA_{t-1} + \sum_{j=1}^n \beta_j + CA_{t-1} + s_t$$

$$IA_t = \sum_{j=1}^n \alpha_j IA_{t-1} + \sum_{j=1}^n \beta_j + CF_{t-1} + s_t$$

$$FOU_t = \sum_{j=1}^n \alpha_j FIU_{t-1} + \sum_{j=1}^n \beta_j + CA_{t-1} + s_t$$

$$FOU_t = \sum_{j=1}^n \alpha_j FIU_{t-1} + \sum_{j=1}^n \beta_j + CF_{t-1} + s_t$$

If the hypothesis is not rejected, it would mean that first variable Granger cause second variable, and that two analysed phenomena's are mutually dependent.

Variable	Probability
FIU does not Granger cause CF	0.0000
CF does not Granger cause FIU	0.0000
IA does not Granger cause CF	0.0000
CF does not Granger cause IA	0.0000

Table 3.: Granger causality test results
 (Source: authors)

According to the results of Granger causality test frequency of use does not cause computer fraud, that is, more frequent use of the Internet by young people increases the number of computer frauds. It was also established that the Internet access that young people have has an impact on computer fraud and copyright abuse which corresponds to similar researches conducted in the world that indicate the trend of unethicallity of young people on the Internet in the highest percentage when downloading other people's work without authorization. The research furthermore established a long-term connection between the phenomena of "frequency of use", "internet acces, "computer fraud" and "copyright abuse". The above was analyzed using the Johansen cointegration method, and the results are presented in table 4. The long-term association between variables was analysed using the Johansen cointegration method (Johansen, 1988). Due to the correction of autocorrelation and endogeneity parametrically, a vector error correction mechanism specification is used. The decision on the number of cointegration vectors is made on the basis of the eigenvalue matrix trace test and the maximum test eigenvalues. The above is shown in Table 4. According to Akaike's information criterion, the lag length 11 was chosen. According to the results of both tests, the null hypothesis of no cointegration can be rejected.

Hypothesized no. of CE(s)	Eigenvalue	Trace statistic	Prob.**	Max-Eigen Statistic	Prob.**
Cointegration IA and CA					
None *	0.997913	5.665.970	0.0000	4.937.649	0.0000
At most 1 *	0.597638	7.283.215	0.0070	7.283.215	0.0070
Cointegration IA and CF					
None *	0.824502	2.259.476	0.0036	1.392.103	0.0566
At most 1 *	0.661834	8.673.739	0.0032	8.673.739	0.0032
Cointegration FIU and CA					
None *	0.934135	24.11172	0.0020	21.76121	0.0027
At most 1 *	0.254585	2.350510	0.1252	2.350510	0.1252
Cointegration FIU and CF					
None *	0.728784	13.64192	0.0933	10.43873	0.1847
At most 1 *	0.329948	3.203197	0.0735	3.203197	0.0735

*Table 4: Johansen cointegration method test results
 (Source: authors)*

The cointegration vector indicates a long-term relationship between Internet access and copyright abuse, and Internet access and computer fraud. Although the Granger causality test confirmed the mutual causality between the frequency of Internet use and Computer fraud and the Frequency of Internet use and Copyright abuse, the Johansen cointegration test did not confirm a long-term association. The connections between variables Internet access and Copyright abuse are positive, which is as expected because the level of access to the Internet increases the level of Computer fraud and Copyright abuse.

4. CONCLUSION

According to the results of Granger causality test more frequent use of the Internet by young people increases the number of computer frauds and has an impact on computer fraud and copyright abuse. The cointegration vector indicates a long-term relationship between Internet access and copyright abuse, and Internet access and computer fraud.

However, although the Granger causality test confirmed the mutual causality between the frequency of Internet use and Computer fraud and the Frequency of Internet use and Copyright abuse, the Johansen cointegration test did not confirm a long-term association. Therefore, the research confirmed a long-term positive cointegration between Internet access, computer fraud an internet access and copyright abuse, for the group of young people aged 16 to 29 years. The results of the research are significant because, despite the lack of a standardized database on the mentioned phenomena, they confirm the need for the establishment of tighter regulation and control of the cyber space. A limitation in research is difficult access to data due to uneven methodology of data collection and presentation and different regulations, which ultimately makes objective scientific analysis difficult. Since intensive work is being done on the standardization of the aforementioned methodologies, and since it is important for strategic decision-makers to monitor trends in the observed population of young people, it will be necessary to continue such research.

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UNVEILING IMPULSIVE PATTERNS: CONSUMER CHARACTERISTICS IN ONLINE AND BRICK-AND-MORTAR SHOPPING

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ABSTRACT

An impulse buying is a spontaneous or ill-considered purchase of a product that is made without prior planning or thought. It is a purchase in which the consumer suddenly decides to buy a product, often under the influence of momentary emotions, impulses or external stimuli, such as advertising or displays on store shelves. Impulse buying can occur both in an online environment, where consumers can quickly click on a product and add it to their shopping cart, and in a brick-and-mortar store, where consumers can buy a product immediately after seeing or touching it. The aim of the paper is to analyze the influence of respondents' socio-demographic factors (gender, age, monthly income, education level and marital status) on the impulse purchases of shoppers who make their purchases online and, in a brick-and-mortar store. The study was conducted with a sample of 243 respondents. The results of the study make several important contributions: Respondent age has a significant impact on online impulse purchases, with younger respondents more likely to make impulse purchases than older respondents, and monthly income has a significant impact on impulse purchases in brick-and-mortar stores, i.e. respondents with lower monthly incomes are less likely to make impulse purchases than respondents with higher monthly incomes. The results show that it is necessary to use different sales channels and marketing strategies to better target specific consumer groups. The paper presents the results of the study.

Keywords: *impulse buying, brick-and-mortar store, online purchase, socio-demographic factors*

1. INTRODUCTION

In today's fast-paced world and with digital technology, impulse buying is becoming increasingly important due to instant access to information and products via the internet and other marketing channels. Marketing strategies that aim to create instant desire and gratification through online platforms, social media or in-and-mortar store promotions can significantly boost impulse buying. Emphasizing impulse buying can be critical for marketing strategists and sales professionals to adapt their approaches to meet the needs of today's consumers. Understanding the psychological and neuroscientific aspects of impulse buying allows for the development of targeted marketing campaigns that target consumers' immediate needs and elicit a quick and emotional response to encourage a rapid conversion to a purchase. Impulse purchases are considered purchases that are associated with stronger emotions such as fun, joy, happiness and enthusiasm, spontaneity and something we need immediately and at that moment than a previously planned purchase (Weinberg and Gottwald, 1982; Rook and Fisher, 1995; Hausman, 2000). Impulse buying accounts for almost 80% of all purchases (Kacen and Lee, 2002), which means that a large proportion of consumers make their purchasing decisions impulsively, based on certain factors that influence them at that moment, without being aware of it, i.e. without planning. Gardner and Rook (1988) state that negative emotions, a bad day, tension and bad mood have a significant impact on consumers' impulsive purchasing decisions. However, Činjurević et al. (2011) and Gardner and Rook (1988) believe that a stressful life or a bad day can be turned into a good day by a positive shopping experience when a new pair of shoes or a bag that matches an existing outfit improves the customer's mood.

Tinne (2011) explains that impulsive buying begins the moment a person looks at a particular product without intending to buy it. In these moments, when people are exposed to various stimuli from the environment that stimulate their desire to buy, they make the decision to buy at that moment without looking for additional information or evaluating alternatives. Different authors categorize impulsive buying consumers differently. Stern (1962) explains that there are four types of impulse buying:

- 1) Planned impulse buying - impulse purchases that are partially planned and where the customer does not make a final decision on a particular product, but makes their decision based on an online advertisement or an in-store sales promotion. Planned impulse purchases take place at the moment when the customer receives a discount on their purchase and decides to buy another item because they believe they have saved, with the promotional price for additional items providing an incentive for a planned impulse purchase.
- 2) Reminder impulse buying - the purchase is made at the moment the customer is reminded to buy a particular product by promotions in an online or brick-and-mortar store. In this case, the customer remembers a certain advertisement or other information from the environment the moment they see the product.
- 3) Suggestion impulse buying - Impulse buying is triggered by an auto-suggestion to buy a particular new product. This form of impulse buying occurs when a consumer sees a product and develops a desire for it without thinking about it beforehand. This purchase takes place when a consumer sees a product, imagines a need or use for the product and decides to buy it. At this point, the consumer is not yet very familiar with the product itself and its features. In this case, the person does not know much about the product, they have no prior knowledge, but they buy the product based on what they see.
- 4) Pure impulse buying - a one-off purchase, i.e. an impulsive purchase where the customer breaks with the current trend of usual shopping. An example of this is when a person goes into a store to buy an item of clothing but is "tempted" to buy more items. The reason for this can be a reminder of the product, a webshop offer, a promotion in a brick-and-mortar store, etc. For example, if a person is offered a belt that matches the pants they want to buy and they decide to buy it, this is a pure impulse buy, as the person would not otherwise buy a belt to go with the pants.

The aim of the paper is to investigate whether socio-demographic factors influence impulse purchases in online and brick-and-mortar stores and whether there are differences between them. In the continuation of the paper, the differences between impulse purchases in online and brick-and-mortar stores are presented, the conceptual framework of the study is outlined on the basis of previous findings and the results of the study are presented in order to achieve the aim of the paper.

2. IMPULSIVE BUYING - ONLINE VS BRICK-AND-MORTAR SHOPPING

Both researchers and retailers recognized the importance of researching impulse purchases in online and brick-and-mortar stores and began to develop marketing strategies to encourage and increase impulse purchases. Now that online sales have taken off and the internet is an increasingly important channel for communicating and selling products, consumers are exposed to marketing incentives that encourage impulse purchases. During the COVID pandemic, many retailers have recognized the need to move their sales to an online environment. A large proportion of consumers are accustomed to shopping online even after the pandemic and therefore the war that was taking place between the different retailers in brick-and-mortar stores has turned into an online war. Karim et al. (2021) agrees with the fact that a large number of leading companies have increasingly shifted their operations to online platforms.

There are some significant differences between impulse buying online and in brick-and-mortar stores. Here are some of the key differences:

- Access to products: Online consumers have access to a wide range of products from the comfort of their own home, which encourages impulse buying, whereas customers in brick-and-mortar stores can try the product immediately, experience its quality and have a real experience with the product.
- External influence: Online sales use a variety of digital marketing tools to encourage impulse purchases, while impulse purchases in brick-and-mortar stores can be encouraged by the visual presentation of products, the placement of products in strategic locations or the presence of salespeople who provide information and encourage customers to make a quick decision (Franjković et al., 2022).
- Availability of information: There is a wealth of information, reviews and product comparisons available to consumers on the internet. However, excessive availability of information can lead to purchase decisions being postponed. In brick-and-mortar stores, on the other hand, information is often limited to what is available at the point of purchase, and customers rely on their own experience, the advice of sales staff or the information on the product packaging.
- Checkout process: When shopping online, the checkout process is often quick and easy, whereas in brick-and-mortar stores customers often have to pass through a cashier. This can affect the speed of impulse purchases. Understanding the differences in the checkout process can help improve the customer experience and encourage impulse purchases.

3. CONCEPTUAL FRAMEWORK

„Consumer traits can base on demographics (age, gender, income, etc.), psychographics (what do people buy – by beliefs, opinions, values, and emotions), geographic (metropolitan area, climate, population density), and behavioristics (like attitude, purchase occasion, user status, benefits sought, loyalty rate)“ (Sritanakorn and Nuangjamnong, 2021:4). In this paper and research, the focus is solely on the demographic characteristics of consumers and whether these have an influence on impulsive purchases online and in brick-and-mortar stores. In the following, the theoretical framework of the individual elements of the demographic characteristics is presented, on the basis of which the hypotheses to be tested in this paper were established. The demographic characteristics considered were gender, age, monthly income, education level and marital status.

3.1. Gender

Many researchers have investigated how gender affects impulse buying. Some studies have shown that there is a significant relationship between gender and impulse buying (Hadjali et al., 2012; Awan and Abbas, 2015; Soče Kraljević et al., 2016). Hadjali et al. (2012) believe that gender is an important element in the observation of impulse buying. In their study, they confirmed the hypothesis that gender has a significant influence on impulsive buying of clothes, but they did not show which gender is more prone to impulsive buying of clothes. As mentioned earlier, their study was conducted in the fashion industry. Awan and Abbas (2015) proved that men are more impulsive than women when comparing the genders, while Dittmar et al. (1995) proved that women are more impulsive consumers than men and act less rationally. Coley and Burgess (2003) found that women buy more than men and are therefore more likely to make impulsive purchases. Soče Kraljević et al (2016) also agree and add that women buy more when they are in a good mood, when there is good music in the stores, when they are traveling or when they have more time (they only investigated for brick-and-mortar stores). On the other hand, there are studies that refute all this, namely that there is no significant correlation between gender and impulsive buying behavior (Rana and Tirthani, 2012; Awan and Arooj, 2014;

Wadera and Sharma, 2018). Awan and Arooj (2014) conducted their study in urban areas in Bahawalpur, Pakistan. In addition, some studies have shown that gender is negatively related to impulsive buying behavior (Ekeng et al., 2012). Based on the above, the following two hypotheses were formulated:

- H1a Gender has an impact on impulsive online buying behavior
- H1b Gender has an impact on impulsive buying behavior in brick-and-mortar stores

3.2. Age

Most studies show that there is a significant correlation between the age of the respondents and impulsive buying behavior, which is also confirmed by Mai et al. (2003), who stated that their research results indicate that the younger population is more prone to impulse buying, probably because they do not yet have expenses for family, housing and/or children. Ekeng et al. (2012), Awan and Arooj (2014) and Awan and Abbas (2015) have shown in their research that there is a significant relationship between the age of respondents and impulsive buying behavior, but the relationship is inverse, i.e. the age of consumers increases while impulsive buying behavior decreases. Kacen and Lee (2002) showed in their research that younger people are more likely to make impulsive purchases because they have less self-control, and Vishnu and Raheem (2013) also showed in their research that younger age groups (18-25) have the greatest influence on customers' impulsive buying behavior compared to other age groups (they only studied brick-and-mortar stores). In the research findings of Soča Kraljević et al. (2016), no significant relationship was found between age and impulsive buying behavior (they only studied brick-and-mortar stores), while in the study by Ghani and Jan (2011), age is negatively associated with impulsive buying behavior. In line with the above, the following two hypotheses are put forward:

- H2a Age has an impact on impulsive online buying behavior
- H2b Age has an impact on impulsive buying behavior in brick-and-mortar stores

3.3. Monthly income

Abratt and Goodey (1990) assume that a higher income level has a stronger influence on impulsive buying (in their study they compared America with other countries in the world). The same was shown by Butkeviciene et al. (2008). Rana and Tirthani (2012) and Awan and Abbas (2015) showed in their studies that there is a positive and significant relationship between monthly income and impulsive buying behaviour, while Awan and Arooj (2014) also showed a relationship between income and impulsive buying behaviour, but with less significance. Fenton-O'Creevy and Furnham (2020) conducted a study on students and young people, the results of which showed that monthly income has the greatest influence on impulsive buying behaviour compared to other demographic characteristics such as gender, age and education. Vishnu and Raheem (2013) showed in their study that income has the greatest influence on impulsive customer behaviour, especially among middle- and higher-income customers (they only studied brick-and-mortar stores). Mai et al. (2003) showed that consumers with a higher per capita income are more likely to make impulse purchases, as they can spend a portion of their income on a purchase they had not planned to make. On the other hand, Jeffrey and Hodge (2007) and Ekeng et al. (2012) have shown in their studies the negative influence of monthly income on impulse buying (the higher the income, the less likely to buy impulsively). Based on the above, the following two hypotheses are put forward:

- H3a Monthly income has an impact on impulsive online buying behaviour
- H3b Monthly income has an impact on impulsive buying behaviour in brick-and-mortar stores

3.4. Education level

Ekeng et al. (2012) and Awan and Abbas (2015) have shown in their studies that education level significantly influences impulsive buying behaviour. In urban areas of India, Rana and Tirthani (2012) conducted a study whose results indicated a negative relationship between education and impulse buying. Accordingly, the following two hypotheses were put forward:

- H4a Education level has an impact on impulsive online buying behaviour
- H4b Education level has an impact on impulsive buying behaviour in brick-and-mortar stores

3.5. Marital status

Previous research has not investigated marital status and its relationship with impulse buying. However, the question arises as to whether there are differences between single, divorced and widowed people, who presumably have more money for themselves but also more time, compared to married or cohabiting people who have less time for impulsive purchases but more money for the same (assuming there are two salaries in the household that are used for utilities, housing costs, food, etc.). It was therefore interesting to investigate whether marital status has an influence on impulsive purchases, and two hypotheses were therefore put forward:

- H5a Marital status has an impact on impulsive online buying behaviour
- H5b Marital status has an impact on impulsive buying behaviour in brick-and-mortar stores

4. METHODOLOGY AND SAMPLE DESCRIPTION

The study was conducted in March 2024 with the aim of investigating how respondents react to impulse purchases. The focus of the paper is on the comparison of impulse purchases in online and brick-and-mortar stores. The data was collected using a questionnaire (Google forms) from a sample of 243 respondents. The first part of the questionnaire related to the socio-demographic data of the respondents, while the second part of the questionnaire examined their impulse purchases in online and brick-and-mortar stores. Respondents' socio-demographic data, i.e. their characteristics, included gender, age, monthly income, education level and marital status, while for impulse purchases the existing scales were used. An adapted scale by Sritanakorn and Nuangjamnong (2021) was used to study impulsive buying behavior in an online store, while the existing scales by Rook and Fisher (1995), Karbasivar and Yarahmadi (2011), and Gulfraz et al. (2022) were used to study and create a scale on impulsive buying behavior in a brick-and-mortar store. All scales are five-point Likert scales, with 1 indicating that respondents disagree completely and 5 indicating that they agree completely. As mentioned earlier, the sample in this research comprised a total of 243 respondents and the description of the sample can be seen in Table 1.

Table following on the next page

		N	%
Gender	Male	46	18,9
	Female	197	81,1
Age	21 - 30	82	33,7
	31 - 40	62	25,5
	41 - 50	75	30,9
	Over 50	24	9,9
Monthly income*	Up to 400 €	43	17,7
	401 – 800 €	27	11,1
	801 – 1200 €	47	19,3
	1201 – 1600 €	47	19,3
	More than 1601 €	57	23,5
Education level	Secondary school	84	34,6
	Faculty (higher education)	123	50,6
	Master or doctoral study	36	14,8
Marital status	Single	91	37,4
	In a married or cohabiting union	152	62,6

* 22 respondents stated that they had no income

Table 1: Sample description

In addition, it was interesting to examine how respondents estimate how much money they have available when basic living costs are not taken into account, i.e. how much money they have left over when they cover housing costs, loans and utilities. The results show that 13.6% of them have a total of €100 available after paying all basic expenses, 15.2% have between €101 and €200, 11.9% between €201 and €300, 7.4% between €301 and €400, 9.5% between €401 and €500, 7% between €501 and €600, 29.2% have more than €600 and 6.2% state that they have nothing left.

4.1. Research results

As mentioned above, the aim of the study was to find out which socio-demographic factors influence impulsive buying, comparing shopping in an online environment and in a brick-and-mortar store. A multiple regression analysis was conducted to measure the influence of the independent variables on the dependent variable. The independent variables were the socio-demographic data of the respondents (gender, age, monthly income, education level and marital status), while the dependent variable was the impulsive buying behavior (in online and in brick-and-mortar stores). A simple regression analysis was conducted, which yielded the following results: for impulsive online buying behavior ($df=5$, $F=2.670$, $p=0.023$) and for impulsive buying behavior in brick-and-mortar stores ($df=5$, $F=1.124$, $p=0.349$). The results show that the model for impulsive online buying behavior is significant and that there is a significant relationship between at least one independent variable and the factor impulsive buying behavior, while this is not the case for buying in a brick-and-mortar store, i.e. there is not enough evidence to show that there is a significant relationship between the independent variables and impulsive buying behavior. To illustrate the relationship and the influence of the independent variables on the dependent variable, the results are presented in more detail in Table 2.

Table following on the next page

	Online store					Brick-and-mortar store				
Variables	B	Std. Error	Beta	t	Sig	B	Std. Error	Beta	t	Sig
(Constant)	2.845	.486		5.858	.000	2.799	.412		6.787	.000
Gender	.179	.170	.074	1.055	.293	.000	.142	.000	.003	.998
Age	-.241	.078	-.256	-3.092	.002*	-.048	.064	-.059	-.744	.458
Monthly income	.0,2	.057	.052	.563	.574	.097	.049	.177	1.994	.047*
Education level	.100	.101	.075	.982	.327	-.092	.087	-.078	-1.055	.292
Marital status	-.073	.146	-.037	-.498	.619	.075	.122	.044	.610	.543

Dependent variable: Impulsive buying

**p < 0.05*

Table 2: Multiple Regression Results

The following can be concluded from the results presented:

- H1a and H1b could not be confirmed, i.e. gender has no impact on impulse purchases online ($\beta=.074$, $p=.293$) nor on impulse purchases in a brick-and-mortar store ($\beta=-.000$, $p=.998$).
- When comparing impulse purchases in online and brick-and-mortar stores, two situations emerged in relation to age. Age has an influence on impulsive buying online ($\beta=-.256$, $p=.002$), with results showing that respondents are more likely to make impulsive purchases at a younger age, i.e. the older respondents get, the less impulsive they are (means are as follows: 21-30 (2.9), 31-40 (2.72), 41-50 (2.47), above 51 (2.28) On the other hand, age has no effect on impulse buying in brick-and-mortar stores ($\beta=-.059$, $p=.458$) This results in H2a being confirmed, while H2b is not confirmed.
- For monthly income, two situations emerged when comparing impulse purchases in online and brick-and-mortar stores. Monthly income has no influence on impulse purchases online ($\beta=.052$, $p=.574$), while it has an influence on impulse purchases in a brick-and-mortar store ($\beta=.177$, $p=.047$). Although the result is marginally significant statically and the results of the overall model are not significant, the result can hardly be commented on. If we look at the mean values, we concluded that respondents with a lower monthly income are less inclined to make impulse purchases than respondents with a higher monthly income. This means that H3a is not confirmed, while H3b is partially confirmed.
- H4a and H4b were not confirmed, i.e. the level of education has no influence, neither in the case of online impulse purchases ($\beta=.075$, $p=.982$), nor in the case of impulse purchases in brick-and-mortar store ($\beta=-.078$, $p=.292$).
- H5a and H5b were not confirmed, i.e. marital status has no influence, neither for impulsive online purchases ($\beta=-.037$, $p=.619$), nor for impulsive in brick-and-mortar store purchases ($\beta=-.044$, $p=.549$).

5. DISCUSSION AND CONCLUSION

Impulse buying is the decision to buy a product or service without prior consideration or planning. Today, impulse purchases are extremely important for all retailers aiming for a modern business, regardless of whether they sell their products online or in a brick-and-mortar store. The results of the survey show that the tendency to make impulse purchases in a brick-and-mortar store (average score 2.82), where you can touch and try the product but also have the option to return it quickly if you do not like it, is greater than for online impulse purchases (average score 2.67).

Although some researchers believe that gender is an important factor in impulse buying (Hadjali et al., 2012), some studies, such as this one, have shown that gender has no effect on impulse buying, regardless of whether it is observed in an online environment or in a brick-and-mortar store. For example, Rana and Tirthani (2012), Awan and Arooj (2014) and Wadera and Sharma (2018) have shown that there is no significant relationship between gender and impulsive buying. Women are more impulsive consumers than men when it comes to impulsive online purchases and impulsive purchases in brick-and-mortar stores, but there are no major differences between them, i.e. the mean values are very close (impulsive online purchases (small=2.6, female=2.68) vs. impulsive purchases in brick-and-mortar stores (male=2.79, female=2.82)). As far as the age of the respondents is concerned, the results are different. Thus, there is an influence of age on impulsive online buying behaviour, which was also confirmed in the studies of Ekeng et al. (2012), Awan and Arooj (2014) and Awan and Abbas (2015). The results also showed that the younger population tends to make impulsive purchases, which was also demonstrated in the study by Mai et al. (2003). This means that young people do not yet have any expenses for housing, family or children and are more likely to make impulse purchases. There is no significant correlation for impulse purchases in brick-and-mortar stores, which was also confirmed in the study by Soča Kraljević et al. (2016), which also investigated impulsive shopping in a brick-and-mortar store. Ekeng et al. (2012), but also this study in the case of online impulse purchases, confirmed that age has no influence on impulse purchases, while in the study by Awan and Arooj (2014) as well as in this study (in the case of purchases in a brick-and-mortar store) there is only a very small correlation between income and impulsive consumer behavior in a brick-and-mortar store. The results show that respondents with a lower monthly income are less inclined to impulsive buying behavior than respondents with a higher monthly income, which was also confirmed in the studies by Abratt and Goodey (1990) and Mai et al. (2003). Interestingly, education level and marital status have no influence on impulsive buying, while Ekeng et al. (2012) and Awan and Abbas (2015), for example, show a significant correlation between education level and impulsive buying in their studies. The limitation of the study lies mainly in the sample, as it is difficult to observe the entire population based on only 243 respondents. Therefore, it is recommended for future research to increase the sample size and expand to other countries to determine if there are differences between countries and their consumer characteristics and impulsive buying behavior. In addition, future research should show what factors influence respondents' impulsive buying behavior (internal factors, external factors or possibly ability to pay, availability of time, etc.). The research results may have been different if two studies had been conducted, one specifically for online impulse purchases and one specifically for impulse purchases in brick-and-mortar stores. There is a possibility that using one questionnaire for both forms of shopping confused respondents and they were unable to concentrate when completing the questionnaire and were thinking of impulse purchases online when answering, whereas the question related to brick-and-mortar stores, and vice versa. In future studies, the research will be conducted with the same respondents but with two questionnaires. Since Sritanakorn and Nuangjamnong (2021) found that consumer characteristics are based on demographic, psychographic, geographic and behavioral characteristics, it would be a suggestion for future research to investigate other consumer characteristics (besides demographic). The results and findings of this research can help companies and retailers develop their strategies, marketing activities and tactics to increase impulse purchases both in the online environment and in brick-and-mortar stores. The findings suggest that certain demographic groups, such as younger consumers and consumers with higher monthly incomes, are more likely to make impulse purchases. These findings have important implications for marketers, who can use this information to develop more effective sales strategies. In addition, understanding these findings can help consumers become more aware of their impulsive tendencies and make more informed purchasing decisions.

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