Economic and Social Development

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Book of Proceedings

Editors:
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CONTENTS

A SYSTEMATIC REVIEW OF THE IMPACT OF FOREIGN DIRECT INVESTMENT (FDI) ON LOCAL INVESTMENT IN HOST COUNTRIES

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ABSTRACT

The debate has always focused on the impact of the installation of foreign direct investment on domestic investment. In other words, does the installation of FDI in a territory crowd out or encourage domestic investment activity? In this article, we have developed a systematic review of the literature that brings together a set of empirical studies that have focused on the impact of FDI on domestic investment. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) is the methodology used to present this systematic review. The results show that the body of work studied can be divided into three approaches, one of which endorses the existence of a crowding-out effect provided by foreign investors to benefit local investments. On the other hand, the second synthesis approves that the installation of foreign investors in a territory favors domestic investment. And the last group of studies whose results show the absence of a relationship between FDI and local investment.
Keywords: *Crowd, FDI, Investment, Impact, Spillovers*

1. INTRODUCTION

Attracting and benefiting from Foreign Direct Investment (FDI) are two questions that arise whenever the subject of foreign direct investment is discussed. The literature on FDI is abundant, especially regarding its attractiveness and the determinants of its location. However, the literature has treated the contribution of Foreign Direct Investment controversially. The debate is still ongoing regarding the contribution of FDI in the development of host countries development. While several authors have supported the traditional argument that FDI is beneficial to the host country since its inflow increases the capital stock, other authors reject this claim and argue that FDI negatively impacts the growth of certain countries. Among the studies that highlighted the positive relationship between foreign direct investment and the economic growth of host countries, there's the work of (Borensztein, De Gregorio, et al., 1998) as well as (Findlay, 1978). Other authors have shown, throughout their empirical studies, the negative and insignificant impact of FDI on economic growth, mainly (Nair-Reichert & Weinhold, 2001), (Saltz, 1992) and (Carkovic & Levine, 2002). The article aims to answer the following question: what are the different studies that have confirmed the existence of an impact of foreign direct investment on domestic investment for host countries?

2. MODEL SPECIFICATION AND DATA

The present paper was carried out following the guidelines proposed in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) in its updated 2020 version, (Page et al., 2021).

By using the item checklist of PRISMA 2020 for the presentation of this report, we will first present the inclusion criteria and then the research strategy adopted for the selection process (Figure 1).

2.1. Eligibility criteria

- In this study, we did not consider a set of works such as books, working papers, and reports only published and indexed articles are included.
- We only examine articles with empirical studies using econometric analysis.
- We only consider articles published in the last 25 years (from 1998 to 2023).

2.2. Search strategy

For this study, we used two database sources: Web of Science (WoS) and Science Direct (SD). First, we launched search queries using the following keywords: "FDI" "impact" "domestic" and "investment", and then we specified the year of publication of the articles published in the last 25 years.

2.3. Screening process
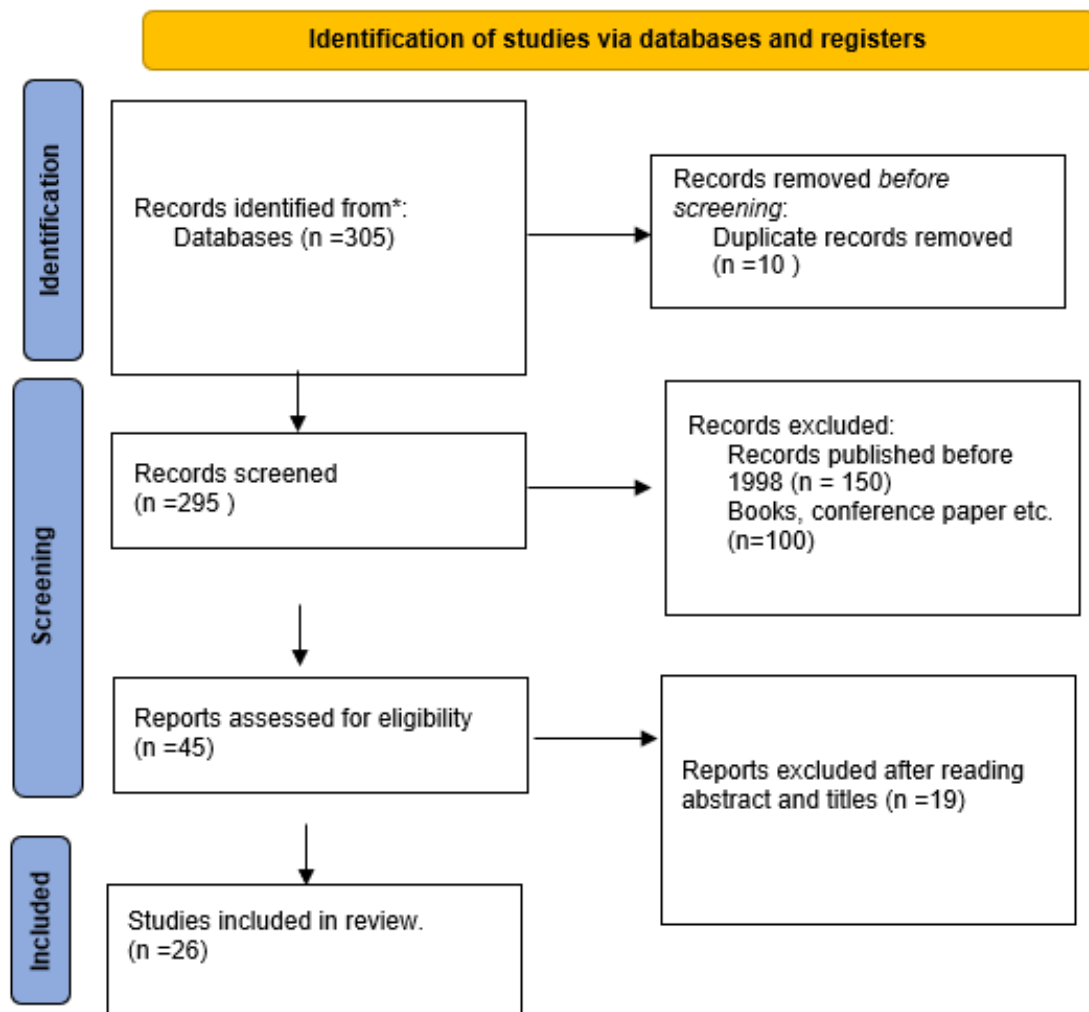
Figure 1: PRISMA 2020 flow diagram for updated systematic reviews which included searches of databases and registers only

3. DESCRIPTIVE ANALYSIS

After the descriptive analysis of the content of all the articles studied, the most frequent words we found are presented in the following word cloud. We notice that the most frequent words are in bold with a large font while the less frequent are with a small font.

Figure 2: Word cloud
(Source: Author's elaboration)

We can see from the word cloud above that the most used words in all articles are "FDI, investment, effect, country, domestic, crowd, run". This indicates that the totality of the papers studied deal with the issue of the impact of FDI on domestic investment, the difference consists in the variables used in each study, which were presented in a small font. The figure below presents the distribution of all the articles studied in this systematic review by year of publication, from which we can see that our study concerns articles published from 1998 to 2023.
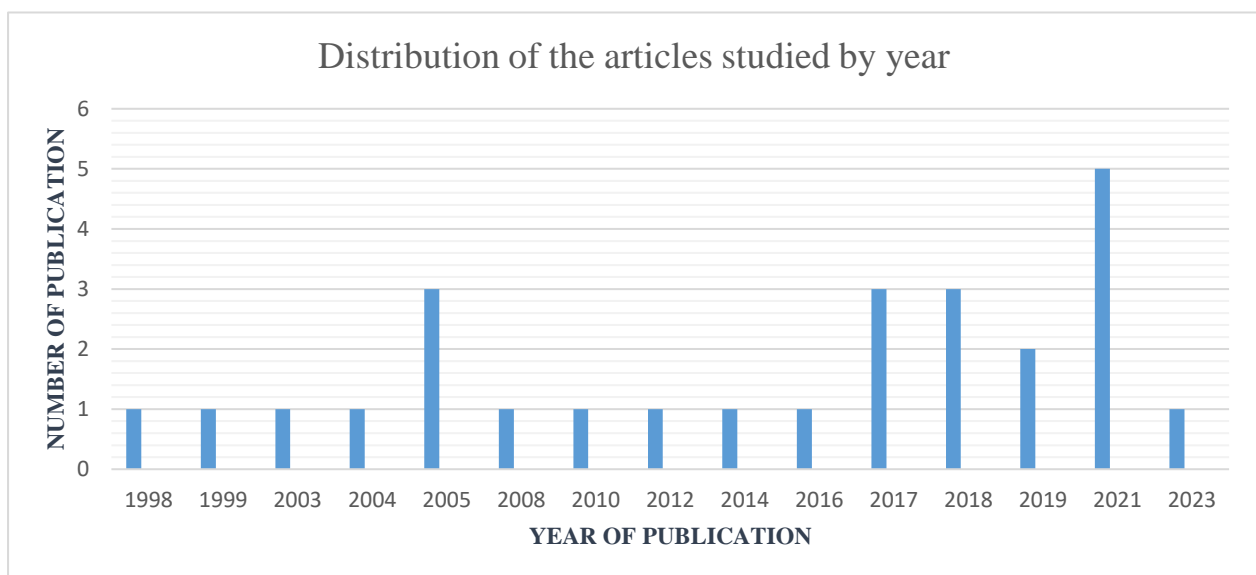
Figure 3: Distribution of the articles studied by year
(Source: the author's elaboration)

4. RESULTS AND DISCUSSIONS

This section divides the results based on the systematic review of 26 articles into three parts. The first one gathers the works that approve a positive impact between FDI and domestic investment. The second part will be devoted to the set of results that confirmed the existence of a relationship between FDI and local investment, although this impact is negative according to them. And the last point concerns the studies that did not approve of a link between FDI and local investment.

4.1. Positive effect

Work is abundant on this impact from a macroeconomic point of view. However, those that focus on the microeconomic order are limited, and this concerns the impact of multinational firms on national enterprises. Starting from the hypothesis that asserts the existence of a positive impact of FDI on host countries, many authors have addressed the problem of knowing what this installation affects, including (Mainguy, 2004), who noted that according to the various studies conducted, the impact cannot be generalized, because the effects of FDI on host countries are linked to several variables, including the periods, the nature of the investment, and the national policies of host countries. (Mody & Murshid, 2005) examined the effect of capital inflows including FDI on local investment in 60 developing countries from 1997 to 1999, the main finding of the study is that FDI stimulates local investment in the long term, but not in the short term. Using the same methodology and econometric model as MODY and MURSHID, on a sample of 22 transition countries for the period 1995-2005, (Mileva, 2008) distinguished three types of capital inflows: foreign direct investment (FDI), portfolio flows, and loans. The study shows the negative effect on local investment in the short run. Nevertheless, the hypothesis of a positive long-term effect is not rejected. A study conducted by (De Backer & Sleuwaegen, 2003) on multinational companies entering 129 manufacturing industries in Belgium and the impact of their installation on domestic entrepreneurship. The result of the study shows that this impact is positive in the long run. However, some potential domestic entrepreneurs abandon their businesses and prefer to become employees of foreign subsidiaries. The study by (Bao & Chen, 2018) shows that the most productive local firms in a given sector react positively to the entry of a foreign investor through increasing innovation, investment, and employee wages. In contrast, the least competitive firms abandon the activity or switch products altogether. The positive impact of MNEs on local firms is presented according to (Amighini et al., 2017) if only multinationals invest in manufacturing production and not in trade-related activities. In their study, the authors analyzed the spillovers of Greenfield FDI on capital accumulation for developing countries in general and Gross Fixed Capital Formation (GFCF) in particular. (Farla et al., 2016) conducted an empirical study with the Gaussian Mixture Model (GMM) method to measure the effect of FDI on domestic investment represented by GFCF as well, and the results rejected the crowding out hypothesis by endorsing the positive impact of FDI on total investment. For the case of South Africa, a study by (Nxazonke & van Wyk, 2019) examines the effect of FDI on domestic entrepreneurship for the period of 2000-2018, the results of the autoregressive model used show that FDI inflows positively influence local investors in both the short and long run, this effect will become relevant in the case where the states provide an ecosystem that encourages domestic entrepreneurship. A study by (Herrera-Echeverri et al., 2014) refers to panel data from 2004 to 2009 for 87 countries to examine the relationship between firm formation, institutional quality, market freedom, and FDI. The results indicate a significant direct relationship between FDI and domestic firm development in emerging countries.

In another study conducted by (Long et al., 2023) that examines the impact of foreign investors' installation on the environmental performance of local firms in China as well, the authors find that this performance improves after FDI entry for the developed country case, otherwise, FDI has a positive effect on domestic investment.

4.2. Negative effect (Crowd-out effect)

(Borensztein, Gregorio, et al., 1998) conducted a study on the impact of FDI on economic growth using data from 69 countries and found that FDI flows are generators of technology transfer for host countries. However, their impact on local investment is negative. Examining the same issue of the impact of FDI on local investment in host countries, (Wang, 2010) in his study on 50 countries including developing countries and least developed countries, the author concluded that contemporary FDI flows eliminate local investment for developing countries, while this effect is neutral on least developed countries. Another conclusion is that the cumulative effect seems to be positive for LDCs, meaning that incoming FDI contributes to increasing local investment over time. But for DCs the effect is neutral. (Morrissey & Udomkerdmongkol, 2012), having studied the effect of FDI on domestic private investment by including other variables related to hosting country governance and economic policies from 1995 to 2009 for 46 developing countries. The results support the hypothesis that FDI crowds out domestic private investment for countries with better governance. However, poor governance discourages FDI inflows, implying that local investment must increase to compensate. Another study confirms the crowding-out hypothesis, that of (Agosin & Machado, 2005), which developed a theoretical model with panel data for the period 1970-1996, divided into two sub-periods, the first from 1976-1985 and the second from 1986-1996. The study covers countries in Africa, Asia, and Latin America. The crowding-out effect is observed in Latin American countries. Nevertheless, a positive impact on local investment is observed in Asian countries, which is a consequence of the screening policies adopted by some Asian countries to ensure that FDI does not crowd out domestic firms. (Markusen & Venables, 1999), conclude through their study that FDI can have an impact on the host economy in several aspects, for them the entry of multinationals stimulates the substitution effect in the final goods sector which favors competition in the same product market and therefore crowding out effect on local firms. The notion of competition is also present in the study by (Barrios et al., 2005) as local firms must adapt to their new competitors. FDI then represents a competitive factor and may cause the exit of local firms while the remaining firms will be able to benefit from the positive spillovers of FDI. Using panel data from 2006 to 2016 for 97 emerging markets including developing and developed countries, with the Generalized moments (SGMM), (Slesman et al., 2021) investigated the role of institutions in the relationship between inward FDI flows and local investment, the authors found the presence of a crowding out effect on domestic entrepreneurship for countries with a lower level of institutional capacity, which they define by several variables including political stability, good governance, and control of corruption. Another factor entering the relationship between FDI and domestic firms, discussed in the study by (Eren et al., 2019), is the right-to-work law. Taking the case of U.S. states for the period between 1996 and 2008, the results indicate that for states that adopt this law, the inflow of inward FDI does not affect domestic investment. On the other hand, for states where the existence of this law is not observed, the crowding out effect is present through the decrease in the average monthly rate of creation and destruction of domestic firms, more precisely according to the authors "a 10% increase in FDI decreases the average monthly rate of creation and destruction of firms by about 4 and 2.5% (compared to the sample)". With microdata on 70 countries for the period 2000 to 2009, (Danakol et al., 2017) studied the relationship between FDI and domestic entrepreneurship, and this relationship seems negative in all the countries studied.

However, it is more pronounced in the manufacturing sector for developed countries than for developing countries. In his thesis (Jude, 2018), the author empirically investigated the relationship between FDI and domestic investment by using data from 10 Central and Eastern European countries from 1995 to 2015. The author finds that FDI leads to creative destruction in the short run, with an eviction effect on domestic investment and a crowding-in effect in the long run. The impact of inward FDI flows on domestic investment in Asian countries is the subject of a study conducted (Budang & Hakim, 2020) on 38 Asian countries between 1993 and 2016. In summary, FDI significantly influences domestic investment performance, although the effect on local firms is unfavorable (crowding out effect found). The study concludes that FDI flows are not always promising. In fact, instead of helping local firms, the inflow of FDI may endanger them by driving them out of the Asian market. Working on Korean market data from 2006 to 2013 and according to the study by (Choi, 2018), the results show a crowding out effect provided by foreign firms on the local firm if the latter is small. (Nguyen, 2021), in his study which focuses on the relationship between foreign direct investment and private investment for both developed and developing countries over the period of 2000-2013, the results of the empirical study show that there is a clear difference between FDI and private investment between developed and developing countries. Second, the governance environment, economic growth, and trade openness stimulate private investment. Third, the effect of tax revenues on private investment in developed countries is opposite to that in developing countries.

4.3. No impact of FDI on domestic investment
In his study (Djokoto, 2021) empirically examined the impact of FDI on domestic investment in agriculture in a sample of 64 countries from 1997 to 2016, according to the author FDI does not influence local investment in developing countries in the short run. However, the crowding-out effect was found for developed countries. A study was conducted by (Chen et al., 2017) for the case of China using quarterly data for the period 1994 to 2014. The results show a neutral relationship between foreign investment installed in Chinese territories and domestic investment without considering the entry mode of these investors. (Hong et al., 2021) attempted to answer the question of the overall average effect of FDI on entrepreneurship through a study that uses meta-analysis to examine the empirical literature on FDI and entrepreneurship in host countries. The observed overall average effect of FDI on entrepreneurial activity is not significant. The results also indicate that FDI does not generally stimulate domestic entrepreneurship. This suggests that public policy efforts to encourage entrepreneurship through FDI are unlikely to succeed.

Table following on the next page

Conclusion of the study nature of the FDI impact on local investment	Period of the study	Authors	Countries selected by the study	Arguments for the study's conclusion
Positive	From 2009 to 2017	(Long et al., 2023)	China	FDI has a positive effect on domestic investment.
	From 2000 to 2018	(Nxazonke & van Wyk, 2019).	South Africa	FDI inflows positively influence local investors in both the short and long run.
	From 2000 to 2007	(Bao & Chen, 2018)	Not indicated	The positive effect for productive local firms.
	From 1964 to 2011	(Amighini et al., 2017)	Developing countries	If only multinationals invest in manufacturing production.
	From 1971 to 2000	(Farla et al., 2016)	46 countries	The positive impact of FDI on total investment.
	From 2004 to 2009	(Herrera-Echeverri et al., 2014)	87 countries	Direct relationship between FDI and domestic firm development in emerging countries.
	From 1995 to 2005	(Mileva, 2008)	22 transition countries	FDI stimulates local investment in the long run.
	From 1997 to 1999	(Mody & Murshid, 2005)	60 Developing countries	FDI stimulates local investment in the long run.
	Not indicated	(Mainguy, 2004)	Developing countries	FDI has positive effects on some developing countries.
	From 1990 to 1995	(De Backer & Sleuwaegen, 2003)	Belgium	The result of the study shows that this impact is positive in the long run.
Negative	From 2000 to 2013	(Nguyen, 2021)	Developed and developing countries	a clear difference between FDI and private investment between developed and developing countries.
	From 2006 to 2016	(Slesman et al., 2021)	97 emerging markets including developing and developed countries	crowding out effect on domestic entrepreneurship for countries with a lower level of institutional capacity.
	From 1993 to 2016	(Budang & Hakim, 2020)	38 Asian countries	Crowding out effect found.
	From 1996 to 2008	(Eren et al., 2019)	United-States.	states where the existence the right-to-work law is not observed, the crowding out effect is present.
	From 2006 to 2013	(Choi, 2018)	Korea	Crowding out effect is observed when the local firms are small.
	From 1995 to 2015	(Jude, 2018)	10 Central and Eastern European countries	FDI leads to creative destruction in the short run.
	From 2000 to 2009	(Danakol et al., 2017)	70 countries	relationship seems negative in all the countries studied
	From 1995 to 2009	(Morrissey & Udomkerdmongkol, 2012	46 developing countries	FDI crowds out domestic private investment for countries with better governance
	From 1970 to 2004	(Wang, 2010)	50 countries including developing countries and least developed countries	FDI flows eliminate local investment for developing countries,
	From 1972 to 2000	(Barrios et al., 2005)	Ireland	FDI represents a competitive factor and may cause the exit of local firms
	From 1970 to 1996	(Agosin & Machado, 2005)	The study covers countries in Africa, Asia, and Latin America	The crowding-out effect is observed in Latin American countries
	Not indicated	(Markusen & Venables, 1999)	South -East Asian economies	crowding out effect on local firms
	From1970 to 1989	(Borensztein, Gregorio, et al., 1998)	69 countries	FDI impact on local investment is negative
Not significant	From1997 to 2016	(Djokoto, 2021)	64 countries	FDI does not influence local investment in developing countries in the short run
	Not indicated	(Hong et al., 2021)	Mixed countries	The observed overall average effect of FDI on entrepreneurial activity is not significant
	From 1994 to 2014	(Chen et al., 2017)	China	Neutral relationship between FDI and domestic investment.

Table1: Synthesis of the impact of FDI on local investment
(Source: Authors elaboration)

5. CONCLUSION

In conclusion, the literature on Foreign Direct Investment is abundant. The 26 articles we have dealt with in this systematic review are based on empirical studies of the impact of FDI on domestic investment for different countries and over different periods. The results of these studies fall into three categories: those that assert the existence of a positive relationship between FDI and domestic investment, other studies that agree that the relationship is negative, and a few other studies whose conclusion is that there is no link between FDI and domestic investment. What all the studies have in common is that they consider FDI flows into the territories as an endogenous variable and that domestic investment, also called local investment by several authors, is presented by the variable of gross fixed capital formation. However, most authors find that the relationship between FDI and domestic investment is influenced by several variables, including GDP, the institutional quality of host countries, the size and performance of local firms, governance, and the notion of time (long or short term). Although there are many empirical studies on the impact of FDI on domestic investment, most of these studies are based on econometric approaches, which use perfectible statistics that often yield non-generalizable results, leaving the question of the relationship between FDI and domestic investment in host countries complex. However, the relevant answer to this question can be found in case studies, of which there are too few.

LITERATURE:
1. Agosin, M., & Machado, R. (2005). Foreign Investment in Developing Countries : Does it Crowd in Domestic Investment? Oxford Development Studies, 33(2), 149-162. https://doi.org/10.1080/13600810500137749
2. Amighini, A. A., McMillan, M., & Sanfilippo, M. (2017). FDI and Capital Formation in Developing Economies : New Evidence from Industry-Level Data (SSRN Scholarly Paper No 2900054). https://papers.ssrn.com/abstract=2900054
3. Bao, C. G., & Chen, M. X. (2018). Foreign Rivals Are Coming to Town : Responding to the Threat of Foreign Multinational Entry. American Economic Journal: Applied Economics, 10(4), 120-157.
4. Barrios, S., Gorg, H., & Strobl, E. (2005). Foreign direct investment, competition, and industrial development in the host country. European Economic Review, 49(7), 1761-1784. https://doi.org/10.1016/j.euroecorev.2004.05.005
5. Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? Journal of International Economics, 45(1), 115-135. https://doi.org/10.1016/S0022-1996(97)00033-0
6. Borensztein, E., Gregorio, J. D., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? Journal of International Economics, 21.
7. Budang, N. A., & Hakim, T. A. (2020). Does Foreign Direct Investment Crowd in or Crowd out Domestic Investment? Evidence from Panel Cointegration Analysis. International Journal of Academic Research in Economics and Management Sciences, 9(1), 49-65.
8. Carkovic, M. V., & Levine, R. (2002). Does Foreign Direct Investment Accelerate Economic Growth? (SSRN Scholarly Paper No 314924). https://doi.org/10.2139/ssrn.314924
9. Chen, G. S., Yao, Y., & Malizard, J. (2017). Does foreign direct investment crowd in or crowd out private domestic investment in China? The effect of entry mode. Economic Modelling, 61, 409-419. https://doi.org/10.1016/j.econmod.2016.11.005
10. Choi, H. (2018). Does FDI crowd out domestic firms? Micro-level evidence from the Republic of Korea. Journal of Korea Trade, 22(4), 405-416. https://doi.org/10.1108/JKT-02-2018-0011

11. Danakol, S. H., Estrin, S., Reynolds, P., & Weitzel, U. (2017). Foreign direct investment via M&A and domestic entrepreneurship : Blessing or curse? Small Business Economics, 48(3), 599-612. https://doi.org/10.1007/s11187-016-9792-z

12. De Backer, K., & Sleuwaegen, L. (2003). Does foreign direct investment crowd out domestic entrepreneurship? Review of Industrial Organization, 22(1), 67-84. https://doi.org/10.1023/A:1022180317898

13. Djokoto, J. G. (2021). Foreign direct investment into agriculture : Does it crowd-out domestic investment? Agrekon, 60(2), 176-191. https://doi.org/10.1080/03031853.2021.19 20437

14. Eren, O., Onda, M., & Unel, B. (2019). Effects of FDI on entrepreneurship : Evidence from Right-to-Work and non-Right-to-Work states. Labour Economics, 58, 98-109. https://doi.org/10.1016/j.labeco.2019.04.008

15. Farla, K., de Crombrugghe, D., & Verspagen, B. (2016). Institutions, Foreign Direct Investment, and Domestic Investment : Crowding Out or Crowding In? World Development, 88, 1-9. https://doi.org/10.1016/j.worlddev.2014.04.008

16. Findlay, R. (1978). Relative Backwardness, Direct Foreign Investment, and the Transfer of Technology : A Simple Dynamic Model. The Quarterly Journal of Economics, 92(1), 1-16. https://doi.org/10.2307/1885996

17. Herrera-Echeverri, H., Haar, J., & Benavides Estevez-Breton, J. (2014). Foreign direct investment, institutional quality, economic freedom and entrepreneurship in emerging markets. Journal of Business Research, 67(9), 1921-1932. https://doi.org/10.1016/j.jbusres.2013.11.020

18. Hong, S., Robert Reed, W., Tian, B., Wu, T., & Chen, G. (2021). Does FDI promote entrepreneurial activities? A meta-analysis. World Development, 142, 105436. https://doi.org/10.1016/j.worlddev.2021.105436

19. Jude, C. (2018). Investissement direct étranger, transfert de technologie et croissance économique en Europe Centrale et Orientale. 223.

20. Long, W., Luo, L., Sun, H., & Zhong, Q. (2023). Does going abroad lead to going green? Firm outward foreign direct investment and domestic environmental performance. Business Strategy and the Environment, 32(1), 484-498. https://doi.org/10.1002/bse.3156

21. Mainguy, C. (2004). L'IMPACT DES INVESTISSEMENTS DIRECTS ÉTRANGERS SUR LES ÉCONOMIES EN DÉVELOPPEMENT. 25.

22. Markusen, J. R., & Venables, A. J. (1999). Foreign direct investment as a catalyst for industrial development. European Economic Review, 43(2), 335-356. https://doi.org/10.1016/S0014-2921(98)00048-8

23. Mileva, E. (2008). The Impact of Capital Flows on Domestic Investment in Transition Economies (SSRN Scholarly Paper No 1090546). https://doi.org/10.2139/ssrn.1090546

24. Mody, A., & Murshid, A. P. (2005). Growing up with capital flows. Journal of International Economics, 65(1), 249-266. https://doi.org/10.1016/j.jinteco.2004.02.003

25. Morrissey, O., & Udomkerdmongkol, M. (2012). Governance, Private Investment and Foreign Direct Investment in Developing Countries. World Development, 40(3), 437-445. https://doi.org/10.1016/j.worlddev.2011.07.004

26. Nair-Reichert, U., & Weinhold, D. (2001). Causality Tests for Cross-Country Panels : A New Look at FDI and Economic Growth in Developing Countries—Nair-Reichert—2001—Oxford Bulletin of Economics and Statistics—Wiley Online Library. https://onlinelibrary.wiley.com/doi/abs/10.1111/1468-0084.00214

27. Nguyen, V. B. (2021). The difference in the FDI - private investment relationship between developed and developing countries : Does it stem from governance environment? Journal of Economic Studies, 48(4), 741-760. https://doi.org/10.1108/JES-09-2019-0451

28. Nxazonke, B., & van Wyk, R. (2019). The role of foreign direct investment (FDI) on domestic entrepreneurship in South Africa. Development Southern Africa, 37, 587-600. https://doi.org/10.1080/0376835X.2019.1667751

29. Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement : An updated guideline for reporting systematic reviews. Journal of Clinical Epidemiology, 134, 178-189. https://doi.org/10.1016/j.jclinepi.2021.03.001

30. Saltz, I. S. (1992). The negative correlation between foreign direct investment and economic growth in the Third World : Theory and evidence. Rivista Internazionale Di Scienze Economiche e Commerciali : RiSEC ; Pubblicazione Trimestrale, 39(7).

31. Slesman, L., Abubakar, Y. A., & Mitra, J. (2021). Foreign direct investment and entrepreneurship : Does the role of institutions matter? International Business Review, 30(4), 101774. https://doi.org/10.1016/j.ibusrev.2020.101774

32. Wang, M. (2010). Foreign direct investment and domestic investment in the host country : Evidence from panel study. Applied Economics, 42(29), 3711-3721. https://doi.org/10.1080/00036840802314580

CONSUMERS' ATTITUDE TOWARDS PRIVACY IN THE CONTEXT OF BIG DATA MARKETING IN LATVIA

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ABSTRACT

Companies obtain results from big data analysis that can positively influence business processes and development. However, one of the most significant obstacles that runs through all stages of the big data analysis process is consumer privacy and attitudes towards it. Despite the rapid development of technology, a large number of companies avoid the big ones of data use, consumer interest in the use and processing of their data is also growing. The aim of the study is, by evaluating the scientific and practical problems of big data use and privacy, to identify modern trends in privacy and its implementation in companies, as well as to determine whether privacy is one of the factors affecting consumer behaviour and attitude. Qualitative semi-structured expert interviews were conducted with 6 participants from leading companies in Latvia and a consumer survey was conducted with 443 respondents from April to May 2022. Quantitative and qualitative methods of secondary and primary data processing have been used. Paper results lead to understanding that consumer knowledge of big data use and processing technologies is relatively low, thus there is low interest in privacy compliance and violations and there is no statistically significant positive correlation between high or average consumer digital skills and knowledge about privacy and big data collection on the Internet, suggesting that consumers with high technological skills are less concerned about their privacy than consumers with low digital skills.
Keywords: big data analysis, marketing, consumer privacy, privacy paradox, consumer trust

1. INTRODUCTION

The growing collection and use of data for commercial and social purposes is affecting the public's view of privacy. Some consumers are dissatisfied if their data is reused without the consumer's consent, for commercial reasons or for other data processing. Other consumers, on the other hand, are not concerned if it means that services are provided for free or at a lower cost. Also, many people voluntarily share information on social networks without much thought about privacy or the further, repeated use of data. It must be taken into account that the consumer nowadays has much less patience to fill out survey questionnaires, especially if the data requested by the company is already recorded somewhere else and can be obtained without much and conscious involvement of the consumer.

An increasing amount of personal information about individuals and society as a whole, collected gradually over a longer period of time, is collected, stored, analyzed and shared both for the commercial needs of companies and in the state administration. Advances in technology, such as the proliferation of the Global Positioning System (GPS), receivers and highly accurate sensors already built into consumer devices, are creating new data sources that offer data acquisition more frequently and at finer levels of detail. New data storage methods, such as cloud storage, are more efficient and cheaper than previous technologies, and they facilitate the retention of large amounts of data for longer periods of time. More powerful analytical capabilities, including new machine learning techniques, enable the analysis of large-scale data sets to gain new insights into consumer and societal characteristics and behavior. These advances in technological development make it possible to measure human activities and behavior more often, to collect and store data that characterize longer periods of activity, to analyze data longer after data acquisition, and to draw conclusions from a large number of individual data (Altman et. al. 2018). In addition, analytical applications and sample sizes are expanding with new big data acquisition methods. Taken together, these factors are driving companies to collect, store and use more personal data than ever before, putting pressure on traditional privacy safeguards. The aim of the study is, by evaluating the scientific and practical problems of big data use and privacy, to identify modern trends in privacy and its implementation in companies, as well as to determine whether privacy is one of the factors affecting consumer behaviour and attitude. Qualitative semi-structured expert interviews were conducted with 6 participants from leading companies in Latvia and a consumer survey was conducted with 443 respondents from April to May 2022. Quantitative and qualitative methods of secondary and primary data processing have been used.

2. THE PRIVACY PARADOX

Research on social media users' interest in their privacy and use of personal data has been conflicting. Some research suggests a privacy paradox in which social media users claim to be concerned about their privacy, but users do little to protect their personal data (Norberg et.al. 2007), while the privacy calculus theory explains that people will reveal personal information in situations where the perceived benefits are greater than the negative consequences (Culnan et. al. 1999). Humans, as rational beings, weigh the expected costs of loss of privacy against the benefits of disclosing information. In this view, there is no privacy paradox because the rewards derived from data disclosure may be difficult to articulate but sufficiently valuable (Shariff et. al. 2021). Other studies find that privacy concerns influence the use of social media, it can be concerns about privacy, security and transparency that influence the online purchase decision (Acquisti et. al. 2006). Because of these controversies, there is still a need for more research on social media platform usage and user privacy concerns and how these concerns relate to dissatisfaction with privacy policies. Authors Cho, Rivera-Sanchez, and Lim found that when analyzing consumer attitudes toward privacy, in addition to Internet experience, characteristics such as age, gender, nationality, and national cultural affiliation of the Internet user are also important, which can influence privacy-related problems and risks (Cho et al. 2009). Several studies have also indicated that female Internet users were generally more concerned about their personal privacy online (Fogel et. al. 2009), while males perceived greater benefits from disclosing their personal information online (Youn, 2009). In general, older people and highly educated people were more concerned about online privacy due to their greater awareness of potential privacy issues (Bellman et. al. 2004). According to authors Debatin, Lovejoy, and Horn, participation in social media sites is related to three needs: the need for entertainment, for social relationships, and for communication and identity formation (Debatin et. al. 2009). For most users, satisfying these needs will be more important than concerns about information privacy, especially since social media has become an integral part

of their daily routine. On the other hand, based on the authors Katalkina and Saksonova, companies are always looking for ways to increase efficiency (Katalkina & Saksonova, 2022). Also, as previously mentioned, consumers will disclose personal information if the benefits outweigh the potential risks. Already in practice, a large number of companies use this characteristic of consumers to obtain, for example, user e-mails and create a customer database. Privacy breaches in the collection, use, and sharing of big data have affected every major tech company, whether it's Facebook, Google, Apple, or Uber. Also, these violations go beyond just the corporate world, privacy violators include governments, municipalities, educational and health institutions. Society has realized that this large data consumption has been facilitated by the rapid growth of social media and mobile applications, various stakeholders collect and use large amounts of data, disregarding consumer privacy policies and ethical norms. As big data touches many areas of daily life and has a profound impact on the social world, the control and verification of big data practices is becoming more and more relevant.

2.1. Current Trends in Consumer Privacy

One of the challenges of privacy today is that the concept of "information" in the context of information privacy is ambiguous. Although many authors refer to the concept of information, few of them clearly articulate it. Author Solove quotes Murphy's definition of personal information as "any data about a person that can be identified as a particular individual" (Solove, 2008), which is both quite broad and also quite narrow. Broad in the sense that there is a lot of information about members of the public that can also not considered private - the occupation of the consumer or any information that can be collected just by looking at a person as they walk down the street.But on the other hand, it could also be considered a narrow definition if personal information is just data that uniquely identifies a particular person — only information that relates to a specific individual, such as name and address. Two common approaches to the concept of information privacy are 'restricted access' and 'control theory'. By implementing the concept of "restricted access", an individual knows how to limit or prohibit others from receiving information about themselves. The basic idea behind this approach is that an individual is able to create private areas or contexts in which personal information is stored, and the person can control privacy, that is, the user is able to restrict others from accessing personal information stored in these areas. The "control theory" approach is to some extent related to the concept of "limited access" - the approach is related to the ability of an individual to control who has access to information about a person. Central to the control tradition is the "role that the individual chooses to use" and the individual's ability to control whether access to information is granted or restricted to other users (Mai, 2016). In the context of the modern digital environment, the author of the paper believes that in practice it is easier for the consumer to implement the control theory approach, because situations often arise in which the consumer is no longer aware that his data is being collected or is under the control of a third party, therefore the modern Internet user no longer has the opportunity to limit who can access private information. On the other hand, the implementation of the control approach is much more possible thanks to the General Data Protection Regulation, which requires companies to necessarily inform the consumer about how the data will be used and how long it will be stored. Authors Skinner, Han, and Chang argue that the concept of privacy most commonly refers to human rights that are used in a variety of situations (Skinner et. at. 2006). On the other hand, the author Clarke already identified four dimensions of digital privacy in the late eighties: privacy of the person, privacy of user behavior, privacy of personal communication and privacy of personal data (Clarke, 1988). On the other hand, authors Bélanger and Crossler have recently argued that privacy of personal communication and privacy of data may have been merged into a single construct of information privacy due to digitization (Bélanger et. at. 2011).

Social media sites explain the right to privacy and how personal data can be used, most often governed by TOS (terms of service) agreements. The TOS agreement is between the user and the social media site, covering the personal information that may be used by the media and the privacy requirements between the two parties. These agreements give social media companies broad rights to collect personal data (Obar et. al. 2020). Research shows that social media users who read TOS agreements tend to be more privacy-conscious and include privacy policies as part of their strategy for controlling their personal information. However, these documents are still long, complex and frustrating for many users. For example, the study examined the TOS agreements and privacy policies of 10 social media sites. The study found that the average TOS was 26,320 words long and the average privacy policy was 7,984 words long. Internet users would need an average of 40 minutes per day to read all the privacy policies they may encounter (Obar et. al. 2019). According to the authors of the work, in this privacy relationship between the consumer and the company, which is in the form of TOS agreements and privacy policies, the General Data Protection Regulation reaches a kind of dead end, where the meaning of its implementation is lost. On the one hand, the requirement to inform the consumer about when his personal data is collected, for what purpose it is used, how long it is stored and even to obtain the active consent of the consumer is fulfilled. However, on the other hand, the consumer has not delved into these terms because, as research shows, these agreements and privacy policies are presented in a long and complicated way for the consumer. Therefore, in practice, the consumer has no knowledge of the use of his data for marketing or analytics purposes. Here, the authors of the paper again want to emphasize the paradox of consumer privacy, which assumes that the consumer cares about the security of his data, but in practice the consumer is not ready to change his habits to protect it. In this case, the authors believe that companies are contributing to the development of the consumer privacy paradox with complex and lengthy TOS agreements and privacy policies. Future industry research in the area of consumer privacy should seek answers to questions such as measuring consumer knowledge of the use of private data for marketing analysis purposes, consumer attitudes toward the use of private data, the effectiveness of TOS agreements and privacy policies in educating consumers and promoting consent, as well as company actions that promote development of the consumer privacy paradox. Today, no user of digital services can do without leaving private data on a certain online site, but it is the responsibility of companies to create an understandable and, in a sense, simple privacy relationship. Also, the authors of the work believe that the paradox of consumer privacy is also facilitated by the different level of trust of consumers in a specific brand or company.

3. PRIVACY HABITS OF LATVIAN CONSUMERS

The method of qualitative and quantitative research was used to achieve the objective of the research. In the study conducted by the authors, a survey of Internet users has been conducted with a participation of 443 Internet users, the residents of Latvia. A random sample was taken. An expert interview has been used as a qualitative research method, during which 6 Latvian digital marketing experts have been interviewed: Māris Kuļikovskis, Jānis Bergs, Aldis Ērglis, Andris Kalnišķāns, Ivo Krievs and Emīls Ludvigs Ērglis. The experts have been chosen in accordance with their education and work experience. Industry experts cite consumer privacy as one of the most important limitations associated with the use of big data in marketing. Both consumer actions and attitudes can affect the effectiveness of using big data in an enterprise. Experts claim that the consumer, on the one hand, does not realize what benefits data processing would bring him, but on the other hand, uses the consumer rights mentioned in the General Data Protection Regulation and wants to find out why the company offers him something. Each such consumer request takes the time and resources of the company's employees, instead of analyzing the data and looking for the most appropriate solutions for the consumer, although

all the company's activities comply with the regulations. Accordingly, this regulation is often misunderstood by the consumer. Consumers in Latvia and Estonia pay close attention to these provisions of the regulation, in contrast to consumers in Lithuania and the rest of Europe. The main way to overcome this limitation, according to experts, is a coherent operation of the IT, marketing and legal department, which can guarantee a better understanding and execution of legal regulations. Also, before analyzing big data, the company's specialists should make sure that the actual data analysis will be effective for the company and will bring the expected return. This will promote the company's readiness for change and employees' understanding of the need to use big data. Most experts claim that consumers perceive little or no privacy threats and therefore have relatively little influence on consumer behavior in the digital environment. Experts say that many consumers see these personalized ads that appear on social networks, for example, as a kind of magic, because the consumer can't even keep track of where the consumer data goes. For example, election manipulation is also possible only with this big data. According to experts, most consumers do not care about their privacy on the Internet, because the consumer prefers some small material benefit more than his privacy. Perhaps consumers pay more attention to privacy when threats arise, for example, after louder public events. When it comes to whether the company needs to explain to the consumer how the consumer's data will be analyzed, the legal side that already provides for these conditions must be taken into account. Experts emphasize that currently consumers give their data very freely. In digital channels, this data collection is also very strongly embedded, so that the consumer cannot receive any service at all without registering and providing data. For material gain, the consumer is ready to sacrifice his privacy. When ana There is no doubt that today's business environment is very dynamic and so is the consumer, therefore, in the company's assessment, the ability to adapt the product to changing market trends as quickly as possible would be a very important benefit from big data analysis. According to experts, it will be increasingly important for companies to work with a smaller amount of data, but which is of higher quality. A company can acquire smaller amounts of data relatively quickly and perform data analysis quickly, but the ability to determine whether the data is of high quality will remain critical. In order to determine the quality of the data, it is necessary for both the company's marketing specialists and data analysts to work together and understand who the company's consumer is and what are the most important characteristics of his service or product. In general, experts agree that the use of big data for marketing purposes is becoming an increasingly important part of business and can give a company's products and services a number of advantages over their competitors. Also, experts believe that the existing regulation partially prevents Latvian companies from reaching the full potential of using big data, because often the law is not sufficiently specific or relevant to the industry. But despite the limitations of the General Data Protection Regulation, companies are choosing to use big data analytics because of the benefits it brings. The authors of the paper conclude that although the use of big data has many of the advantages listed above, they do not arise solely from the fact that big data analysis is performed. According to the expert, the company must constantly improve its customer database and make sure that this data is of high quality. Similarly, the use of big data does not depend on the industry in which the company operates, but on the business goals that the company wants to achieve. If the company's goal is to improve customer service, then it is likely that the company will pay attention to the data of the customer's experience, data acquisition and analysis of the obtained information, regardless of the industry in which the company operates.lyzing whether consumers are ready to give their consent for their data to be analyzed, most experts say that most consumers do not mind having their data collected and analyzed for marketing purposes. Consumers do not mind agreeing to these terms as long as the consumer knows what happens to their information and how it is analyzed, and it is also important that this information is presented in plain language.

Taking into account that the consumer does not object to the use of big data, the most important thing is to respect the interests of the consumer and the existing legislation. The authors of the work can conclude that the threat to consumer privacy and the attitude towards the use of big data in marketing is not an insurmountable obstacle for the company, as long as the consumer is informed about the fact that the data is collected and how it is used. Also, the consumer has an important material benefit in exchange for his privacy. The extent of this material benefit certainly depends on the product's target audience and its interests. In order to find out what the knowledge and habits of consumers are regarding the security of private data on the Internet, respondents were asked to rate several statements. As the results show (Fig 1), 58.8% of the respondents are rather not sure (46.7%) or are not sure at all (12.1%) about where and who collects and stores personal data of users. According to the authors, this indicator is very low and proves the low level of knowledge of consumers about big data marketing. Therefore, despite the high use of digital technologies and services, consumers have no information about what internet user data is generated, where it goes and who analyzes it.
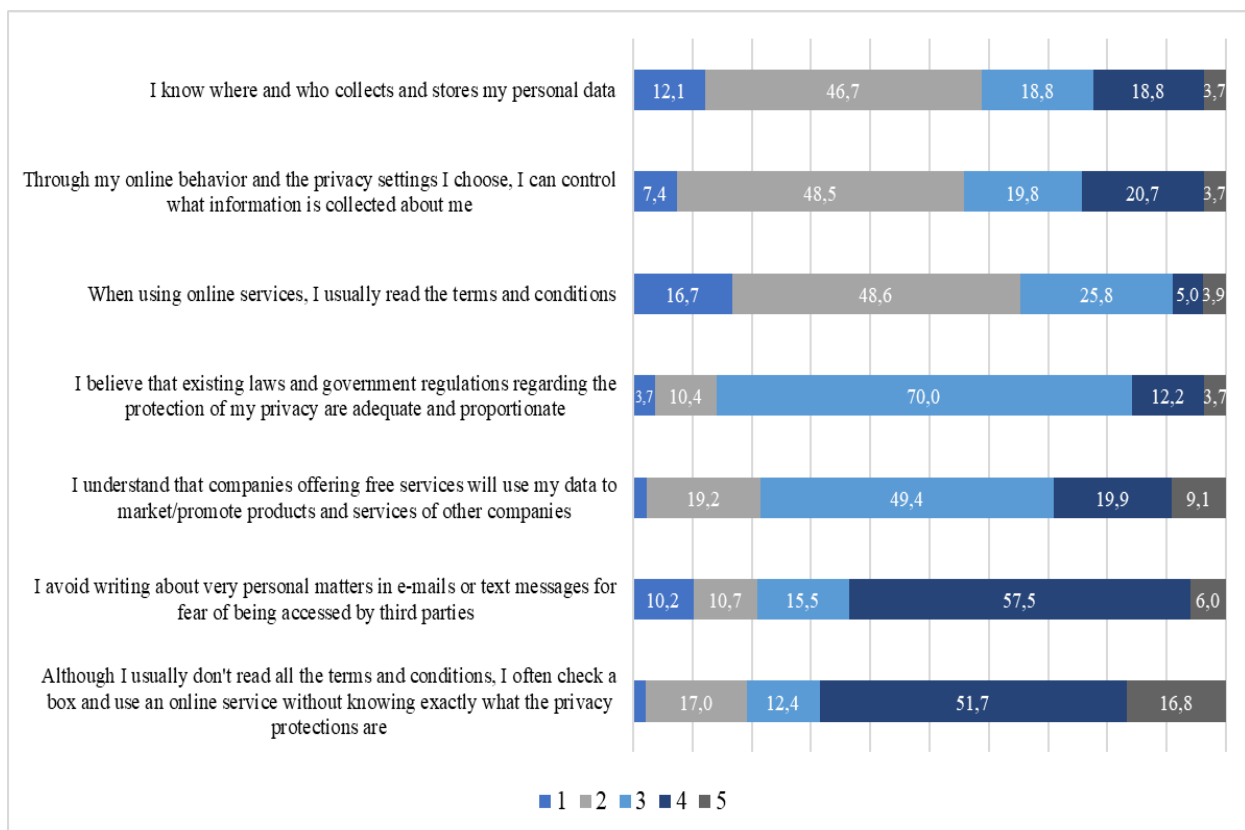
Figure 1: Respondents' evaluation of data security claims (%, n=443)
(Source: created by the authors of the paper based on the results of the survey)

This conclusion is also confirmed by the evaluation of respondents' statements about privacy security habits. For example, the majority of respondents, 48.5%, rather disagree that consumers can control what information is collected about them through their online behavior and the privacy settings they choose. Likewise, 48.6% of respondents rather disagree that they usually read the terms and conditions before using online services. On the other hand, most of the surveyed respondents (70%) do not have a specific opinion on whether the existing laws and government regulations regarding the protection of consumer privacy are adequate and proportionate.

According to the authors, lack of familiarity with laws and government regulations also results in less understanding of what data security regulations may be violated and what consumer rights are in relation to the security of their privacy. According to the data analysis, there is a very strong correlation between the statements "I know where and who collects and stores my personal data", "Thanks to my online behavior and the privacy settings I choose, I can control what information is collected about me" and "When using online services, I usually read the terms and conditions". Accordingly, respondents who are aware of how their private data is being used online also generally do more to protect their data and pay more attention to privacy policies and regulations (not only do they know they exist, but they familiarize themselves with them when using services). Crucial to the study was whether consumers would be willing to pay for online products and services but protect the security of their data. According to the results of the study, the majority of consumers, or 74.5%, would prefer not to pay for services, but understand that in return the company is going to collect and use the consumer's personal data for commercial purposes. As can be seen in Table 1, such a trend is most clearly visible in the age group up to 44 years. On the other hand, starting from the age of 45, the proportion of consumers who would rather pay for services rather than allow companies to use their personal data for commercial purposes increases. Such results are explained by the greater caution of consumers in these age groups and the desire to insure against various risks.

			Age of respondents						Total
			up to 24 years	25-34	35-44	45-54	55-64	65 and over	
Respondents' willingness to pay for online services	In general, I'd rather pay for a service than let companies use my personal data for commercial purposes	Number of respondents	18	39	24	26	3	3	113
		%	24.7%	27.5%	16.0%	39.4%	37.5%	75.0%	25.5%
	In general, I would prefer not to pay for the service, but I understand that in return the company is going to collect and use my personal data for commercial purposes	Number of respondents	55	103	126	40	5	1	330
		%	75.3%	72.5%	84.0%	60.6%	62.5%	25.0%	74.5%
Total		Number of respondents	73	142	150	66	8	4	443
		%	16.5%	32.1%	33.9%	14.9%	1.8%	0.9%	100.0%

Table 1: Cross-tabulation of respondents' willingness to pay for online services and respondents' age
(Source: created by the authors of the paper based on the results of the survey)

According to the data analysis, the low level of consumer trust (in social media and telecommunications companies) does not encourage the implementation of additional privacy security measures, respectively, no statistically significant negative correlation was observed between trust in social media or telecommunications companies and privacy security claims. It can be concluded that a low level of trust in social media does not promote cautious consumer behavior in the digital environment, for example, a higher level of agreement was not observed for the following statements - "I avoid writing about very personal matters in e-mails or text messages because I am afraid that third parties could access them", "I usually read the terms

and conditions when using online services" or "I read the terms of service before downloading apps or programs". Consequently, the existence of a consumer privacy paradox in the Latvian Internet consumer market is proven. In addition, the paradox of consumer privacy can be tested by measuring the correlation between consumers' willingness to pay for services, thus protecting their data, and between the statements "I know where and who collects and stores my personal data". There is no statistically significant correlation between these measurements, which indicates that , if the consumer has a higher knowledge about the use of big data in business, then these consumers still do not consider it necessary to pay for online products and services to protect their data from collection and analysis. According to the authors of the paper, although consumers are aware of the potential risks associated with the use of big data in marketing, most consumers are not ready to make investments to protect their security. Therefore, it can be predicted that, thanks to the paradox of consumer privacy, there will still be relevant platforms for the use of free digital services, which in exchange for providing the service will receive consumer data, which will be used further for their business. Similarly, companies that want to build their customer database will still be able to provide a relatively small benefit to the consumer, as long as the consumer is willing to leave their information with the company.

4. CONCLUSION

The technical language often used in privacy notices and the hurdles required to change privacy settings or opt out of data collection can be confusing and, once implemented, can damage the user experience. In addition, the lack of viable market alternatives can reduce consumer choice: users must consent to data collection and tracking by companies or risk losing an optimized service experience or services. There is not much direct competition between many of these services and companies, and the larger companies benefit from network effects and self-reinforcing data advantages. The results of the quantitative study show the knowledge and attitude of Latvian consumers towards the use of data analysis in marketing and implemented privacy security measures. Summarizing the data obtained in the study, it can be concluded that, despite the respondents' high use of digital technologies and services, the respondents have no information about what internet user data is generated, where it ends up and who analyzes it, which indicates low knowledge in the use of privat data analysis in marketing and business. Most consumers do not object to having their data analyzed so that companies can provide consumers with personalized offers or to improve the quality of the company's product or service. However, consumers object if this data is sold to third parties for marketing and commercial purposes, which proves the importance of data control emphasized in the theoretical part. The data analysis carried out proved the paradox of consumer privacy, when the consumer cares about the protection of his data, but the consumer does not take practical steps to protect this privacy. According to the authors of the work, this trend is mainly related to the lack of consumer knowledge about how data can be protected. On the other hand, marketers and data analysts must use this paradox to expand their large data storage, because only from a full-fledged data set is it possible to perform data analysis relevant to business and marketing. The research question for today's marketers is no longer whether or not to collect consumer data, but how to determine when and how it is ethical and responsible to analyze that information, what to look for in the data, what questions to ask about the data, and at what scale make reasonable predictions about future events and actions based on this data. The most important provision of the GDPR is that companies must allow consumers to choose what private data is collected, where it is used and for what purposes. This consent affects the company's future marketing processes, such as e-mail marketing, SEO, personalized ads and offers, improved consumer experience and the quality of service received, and the use of analytics tools.

Social media sites explain the privacy interests and how personal data may be used in the most common terms of service. However, research shows that these often long and complex legal documents are cumbersome and largely unread.

LITERATURE:
1. Acquisti, A., Gross, R. (2006). Imagined Communities: Awareness, Information Sharing, and Privacy on the Facebook. *Privacy Enhancing Technologies*, 4258, pp.36–58.
2. Altman, M., Wood, A., O'Brien, D.R., Gasser, U. (2018). Practical approaches to big data privacy over time, International Data Privacy Law, 8(1), 29–51.
3. Bellman, S., Johnson, E.J., Kobrin, S.J., Lohse, G.L. (2004). International Differences in Information Privacy Concerns: A Global Survey of Consumers. *The Information Society*, 20(5), pp.313–324.
4. Bélanger, F., Crossler, R.E. (2011). Privacy in the digital age: a review of information privacy research in information systems, MIS Quarterly, 35(4), 1017–1041.
5. Culnan, M.J., Armstrong, P.K. (1999). Information Privacy Concerns, Procedural Fairness, and Impersonal Trust: An Empirical Investigation. *Organization Science*, 10(1), pp.104–115.
6. Clarke, R. (1988). Information technology and dataveillance, Communications of the ACM, 31(5), 498–512.
7. Hichang Cho, Rivera-Sánchez, M., Sun Sun Lim (2009). A multinational study on online privacy: global concerns and local responses. *New Media & Society*, 11(3), pp.395–416.
8. Debatin, B., Lovejoy, J.P., Horn, A.-K. , Hughes, B.N. (2009). Facebook and Online Privacy: Attitudes, *Journal of Computer-Mediated Communication*, Behaviors, and Unintended Consequences. 15(1), pp.83–108.
9. Fogel, J., Nehmad, E. (2009). Internet social network communities: Risk taking, trust, and privacy concerns. *Computers in Human Behavior*, 25(1), pp.153–160.
10. Katalkina, O., & Saksonova, S. (2022, February). Crowdfunding Cross-Border Business Financing Practice: The Evidence from the Baltic States. In Reliability and Statistics in Transportation and Communication: Selected Papers from the 21st International Multidisciplinary Conference on Reliability and Statistics in Transportation and Communication, RelStat2021, 14-15 October 2021, Riga, Latvia (pp. 472-481). Cham: Springer International Publishing.
11. Mai, J.E. (2016). Big data privacy: The datafication of personal information, The Information Society, 32(3), 192-199.
12. Norberg, P.A., Horne, D.R., Horne, D.A. (2007). The Privacy Paradox: Personal Information Disclosure Intentions versus Behaviors. *Journal of Consumer Affairs*, 41(1), pp.100–126.
13. Obar, J. A., & Hatelt, A. (2019, August). TL; DR and TC; DU: An assessment of the length and complexity of social media policies. In Association for education in journalism and mass communication conference.
14. Obar, J.A., Oeldorf-Hirsch, A. (2018). The biggest lie on the Internet: ignoring the privacy policies and terms of service policies of social networking services. *Information, Communication & Society*, 23(1), pp.1–20.
15. Shariff, A., Green, J., Jettinghoff, W. (2021). The Privacy Mismatch: Evolved Intuitions in a Digital World. *Current Directions in Psychological Science*, 30(2), pp.159–166.
16. Shariff, A., Green, J., Jettinghoff, W. (2021). The Privacy Mismatch: Evolved Intuitions in a Digital World. *Current Directions in Psychological Science*, 30(2), pp.159–166.
17. Solove, D.J. (2008). Understanding Privacy, *Harvard University Press*, 420, 1-24.

18. Skinner, G., Han, S., Chang, E. (2006). Integration of situational and reward elements for fair privacy principles and preferences, IEEE international conference on industrial technology, 3078–3082.

THE SHARING ECONOMY RESULTING FROM NEW DIGITAL PLATFORMS IS DISRUPTING THE ENTREPRENEURIAL ECOSYSTEM

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ABSTRACT

The sharing economy has recently encouraged a new type of entrepreneur to change conventional entrepreneurial ecosystems. This conceptual research project seeks to examine the impact of digital sharing platforms on the entrepreneurial ecosystem, including its characteristics, theoretical approaches, and the motivations of individuals to participate as entrepreneurs. Through an analysis of relevant literature, this study aims to explore how social, ecological, and economic values associated with the sharing economy shape both society and the entrepreneurial ecosystem. The findings of this research will identify promising avenues for further investigation.
Keywords: *sharing economy, entrepreneurial ecosystem, alternative economic model, sustainability, digital platforms*

1. INTRODUCTION

Sharing is as old as humanity and has always been part of community life. Its roots lie in barter and donation (Sauvé et al., 2016). We learn to share from childhood, but it becomes more complex as we grow older. We share public goods such as roads and schools, but draw boundaries around our private property. In contemporary society, the individual often takes precedence over the principle of sharing, although some communities, particularly in rural areas, continue to uphold this value (Sekhar et al., 2014). The concept of collaborative consumption, which dates back to the late 1970s, brought sharing back into the mainstream. The development of the Internet in the 1990s opened up new ways of sharing by eliminating physical and psychological barriers (Schor, 2014). While the core concept of sharing remains unchanged, technological advancements have expanded the ways in which it is carried out. The modern sharing economy have started when certain commercial web sites like eBay and Amazon became publicly available. Today, social networks and data-sharing platforms offer individuals new opportunities within the sharing economy. These opportunities are diverse, such as bike-sharing (e.g., Bixi) and car-sharing (e.g., Communauto), to crowdfunding (e.g., GoFundMe and La Ruche), accommodation services (e.g., Couchsurfing and Airbnb), home exchange services (e.g., Home Exchange and Love Home Swap), as well as services that aim to maximize the use of tangible goods (e.g., Uber) or exchange services and knowledge (e.g., Skillshare). Although the sharing economy offers many opportunities, it also presents threats and challenges for businesses (Kathan et al., 2016). Entrepreneurs in the sharing economy pose a serious threat to traditional entrepreneurial ecosystems. This forces companies to reconsider the role of their resources and business model.

The revision of the business model is aimed at transforming business processes that were previously based on conventional models to ones that offer the possibility of sharing resources with other individuals and companies (Kathan et al., 2016). The sharing economy is based on the principle that many resources are not used efficiently and optimally (Siuskaite et al., 2019). Additionally, the literature links the functional economy to the sharing economy (Sauvé et al., 2016). Some companies are increasingly considering the adoption of a functional economy by offering their customers the option to use their products instead of buying them. The sharing economy encompasses not only the sharing of goods and services but also generosity, cooperation, and mutual aid (Barbu et al., 2018). Interactions between actors are essential in this type of economy. In the past, individuals only shared with friends or people they knew. Since the interactions in these collaborative lifestyles are at the heart of these exchanges, trust between individuals was essential. This trust plays an even more important role when the exchanges relate to the sharing of knowledge or know-how (Yasir and Majid, 2017). Since it is difficult to establish trust between individuals who do not know each other, the sharing economy uses technology, particularly digital platforms, to facilitate social exchanges and create an ecosystem conducive to sharing between strangers. Indeed, the use of technology ensures and validates the level of trust (Botsman and Rogers, 2010). Digital platforms act as intermediaries, providing a certain guarantee or reciprocity (e.g., PayPal). Individuals can now sell, buy, rent, and borrow resources with both friends and strangers. . They can thus find the balance between their various interests and the common good. Although the concept of the sharing economy was only invented in 2007 by Lawrence Lessig (Oh and Moon, 2016), its growth took off after the global economic recession of 2008 (Siuskaite et al., 2019). Moreover, according to Price Waterhouse Coopers (2015), the incomes of companies linked to the sharing economy should increase from 15 to 335 billion US dollars between 2013 and 2025. This growth represents an increase of 2133% in 12 years, compared to 40% for companies using the traditional operating model. The development of the sharing business concept has been influenced mainly by new trends related to social responsibility and the desire to do our part in the face of global ecological problems. The concept of the sharing economy was only invented in 2007 by Lawrence Lessig (Oh and Moon, 2016), but its growth took off after the global economic recession of 2008 (Siuskaite et al., 2019). Companies linked to the sharing economy are projected to increase their incomes from 15 to 335 billion US dollars between 2013 and 2025, representing a growth of 2133% in 12 years, compared to 40% for companies using the traditional operating model, according to Price Waterhouse Coopers (2015). The development of the sharing business concept has been influenced mainly by new trends related to social responsibility and the desire to address global ecological problems. On the other hand, it was only after the work of Botsman and Rogers (2010) that the literature began to distinguish between the concepts of the sharing economy and collaborative consumption. There are many similarities between these two concepts, and some authors still consider them as synonyms (Sauvé et al., 2016), while other authors see differences. To this effect, Barbu et al. (2018) argue that the sharing economy involves production, trade, and consumption in a collaborative manner. Collaborative production requires networks of people to design, produce, or distribute products, while collaborative commerce uses social media to support social interactions for buying and selling products and services online. With regard to collaborative consumption, it is based on a system of sharing and commercializing goods aimed at reducing costs or mitigating the impact on the environment. Furthermore, Botsman and Rogers (2010) identify two roles that individuals can play in collaborative consumption. Participants can act as providers by making their assets available for rental or sharing, or they may also be users of those assets rather than owners. Moreover, The Economist magazine argues that consumers involved in collaborative consumption can even become "micro-entrepreneurs."

The collaborative consumption system aims not to review the notion of ownership but to review its use, which makes it possible to extend the useful life of products. This new entrepreneurial ecosystem encourages a market for the redistribution and reuse of products. Although the ownership of the product remains individual, its use is maximized by common use. Collaborative consumption must also consider where and when the asset is needed. In short, the entire way of life of the sharing economy is becoming collaborative. The assets shared or exchanged are not only physical goods, but also intangible or less tangible goods, such as time, space, knowledge, and skills. Although it may seem at first glance to be complementary to traditional entrepreneurial ecosystems, this new ecosystem resulting from the sharing economy is modifying competitive forces by increasing the offering to consumers. In order to better understand this ecosystem, this article will define the concept of sharing economy, analyze the dimensions that characterize it and the theoretical approaches to understand it. Finally, the analysis of the motivations of the stakeholders involved in the sharing economy will make it possible to identify promising avenues of research.

2. DEFINITION OF THE SHARING ECONOMY

It is worth noting that the concept of the sharing economy is defined by the Oxford Dictionaries as "an economic system in which people can share possessions, services, etc., usually by means of the internet". However, some authors exclude the technological aspect from the definition of the sharing economy. This is also the case with Matofska (2015), who defines the sharing economy as a socio-economic ecosystem that shares human or physical resources. This ecosystem includes the development, production, distribution, trade, and shared consumption of goods or services between organizations or people (Lasmar et al., 2019). Other authors, such as Siuskaite et al. (2019), offer a revised and more comprehensive definition that takes into account not only technology but also intangible resources: "an economic system in which assets or services are shared between private individuals, either free or for a fee, typically by means of the internet". Sharing economy markets revolve around digital platform-based sharing economy businesses that compete with other like-minded and traditional businesses. Digital platforms, especially those aimed at rapid growth and providing economies of scale, generally result in lower barriers to market entry. Sharing economy companies, therefore, find it easier to penetrate markets than traditional companies (Demary, 2015). Despite the efficiency and benefits associated with the sharing economy, it presents regulatory challenges. The difference in regulatory regimes between collaborative digital platforms and traditional companies, subject to more restrictive rules, can, in some cases, lead to situations of unfair competition in the market (Goudin, 2016). This regulatory difference raises questions about how the rules of a fair competitive game can be restored between the two parties. A thorough analysis of sharing economy markets by competition policy-makers would be imperative. It should be assessed whether the framework and regulations, which were originally put in place to organize markets with traditional companies, also apply to sharing economy companies. Due to the heterogeneity of the many markets in which sharing economy companies operate, each affected market must be considered separately. According to Demary (2015), there are two possible outcomes: either the existing regulation and framework must be applied to all companies in a market, or they must be reviewed and possibly modified.

3. THEORETICAL APPROACHES

In order to explore the sharing economy, several theoretical approaches have been used. First of all, there is the work of Cheng (2016) who advocates the use of the theory of social presence. According to this author, social presence strengthens trust between individuals, especially online exchanges. In the same line, Geiger et al. (2018) suggest exploring the sharing economy through the theory of exchange through social networks.

Agency theory is also relevant for uncovering the relationship between agent (service providers) and principal (local government) to achieve the common goal (Cohen and Kietzmann, 2014) and for exploring the relationship between organizations private and public (Dharwadkar et al., 2000). For pricing, some sharing economy companies apply dynamic pricing theory (e.g., Uber), while others leave pricing decisions to service providers (e.g., Airbnb) (Gibbs et al., 2018). From an institutional theory perspective, Gonzalez-Padron (2017) suggests establishing ethical standards to explore the dilemmas faced by sharing economy companies in gaining consumer trust. Finally, the literature review has identified that the transaction cost theory (TCT) is clearly the most used in the literature to explore the concept of the sharing economy, which involves new transaction methods. More specifically, it is about minimizing the cost of exchanging resources (Akbar and Tracogna, 2018). As we mentioned earlier, the transaction cost theory is the most widely used approach in the literature to understand the sharing economy phenomenon. According to Apte and Davis (2019), the reason why few sharing economy companies were observed in the past can be attributed to "transaction costs". These costs are associated with finding information, negotiating, concluding contracts, and communicating as a result of a transaction between two companies (Williamson, 1975). Consequently, these costs are incurred during an acquisition, an alliance, a purchase of products or services from a supplier or a subcontractor, or a sale, in short, during any occasion that brings independent entities into relation (Williamson, 1975). Williamson (1975) argued that all transaction costs arise because all economic agents act rationally and opportunistically, assets have specificity in their use, and uncertainties cannot be avoided. Therefore, it is essential for a company to determine the amount of these costs, which often leads to a strategic modification of development methods. Today, the significant reduction in transaction costs, due to advances in technology and information, has served as a catalyst for the rapid growth of the sharing economy (Apte and Davis, 2019). In this context, Henten and Windekilde (2016) utilize TCT to explain that the main innovations offered in this ecosystem are the multifunctional platforms that enable easy connection between buyers and sellers of services, significantly reducing transaction costs. This cost reduction is the main reason for the proliferation of innovative service economy companies in the United States (Apte and Davis, 2019). Cloud computing has played a significant role in reducing transaction costs within the sharing economy ecosystem (Berry et al., 2006). Online payment systems companies, which emerged around the same time as the sharing economy, have made it easier for players in this ecosystem to collect payments from their customers and pay their service providers, which has had a positive impact on their development and growth (Apte and Davis, 2019). The reduction in transaction costs in a sharing economy is also attributable to the concept of "inventoried services". This concept was first introduced by Chopra and Lariviere (2005) and further developed by Davis et al. (2015). The purpose of creating service inventories is to facilitate and/or reduce steps and time in the service delivery process, which reduces transaction costs and creates customer value during a service encounter.

4. CHARACTERISTIC DIMENSIONS

To fully understand the concept of the sharing economy, it is necessary to be aware of its characteristics. Some authors have analyzed the characteristics of the sharing economy by grouping them into several dimensions, including the article by Muñoz and Cohen (2018). These authors specified six distinct dimensions to the sharing economy, which they named the "compass of the sharing economy model." The authors dealt with the degree of technological dependence, the role of the intermediary, the commercial approach, the shared resources approach, the governance model, and the type of platform. Additionally, Wruk et al. (2019) conducted an analysis of 67 organizations based on the sharing economy in Germany.

According to them, there is no consensus on the characteristics of sharing economy models, but they did identify six dimensions: technological dependency, type of platform, type of resources, currency of exchange, ownership, and the scope of sharing. This reaffirms the work of Muñoz and Cohen (2018) on technological dependency and type of platform, while introducing four additional dimensions. Overall, the analysis of the literature, including the works of Muñoz and Cohen (2018) and Wruk et al. (2019), has identified ten dimensions related to the characteristics of the sharing economy.

4.1. Technological Dependency
The first dimension is based on the degree of technological dependence (Muñoz and Cohen, 2018; Wruk et al., 2019). The sharing economy model is often centered around technology, which can even inspire individuals to become entrepreneurs in this model, such as with Uber or Airbnb, as these entrepreneurs could hardly exist without technology. For other companies, technology simply facilitates interactions between various actors by supporting exchanges on digital platforms. It helps to ensure trust between individuals (Botsman and Rogers, 2010). Although most sharing economy businesses rely on digital platforms and technology plays an important role, some businesses can thrive without these technologies. For example, entrepreneurs can share physical spaces in innovation parks. The degree of technological dependence is therefore a characteristic dimension of the sharing economy entrepreneurial ecosystem, which varies according to the model used by the entrepreneurs.

4.2. Role of the Intermediary
The role of intermediaries is an important characteristic dimension in the sharing economy. According to Muñoz and Cohen (2018), sharing economy models should consider whether transactions on digital platforms are determined by market forces or influenced by an intermediary. In cases where the platform is governed by market forces, individuals or entrepreneurs set the value of the products and services exchanged without the intervention of an intermediary, as is the case with Airbnb. Other sharing economy models, such as Communauto and Uber, involve intermediaries to standardize transactions, whether monetary or non-monetary.

4.3. Commercial Approach
Muñoz and Cohen (2018) consider the commercial approach as a characteristic dimension of the sharing economy. Some sharing economy models aim to generate profits, while others focus more on non-profit social or environmental goals. Some entrepreneurs adopt a hybrid approach that includes both financial and social objectives. Moreover, Hamari et al. (2016) argue that some entrepreneurs embrace a business approach to the sharing economy, aiming to support a sustainable economy that combines both financial and social goals.

4.4. Shared Resources
In sharing economy models, the approach to shared resources takes on one of three forms: optimizing new resources, leveraging underutilized resources, or finding new uses for used resources (Muñoz and Cohen, 2018). Some models aim to optimize new resources by making them available to consumers. In this approach, the digital platforms used are generally "Business to Consumer" platforms, such as car-sharing companies like Communauto. Other sharing economy models seek to leverage underutilized resources such as storage space, specialized equipment, and residences or parts of residences, such as Couchsurfing. Finally, finding new uses for used resources is also seen as a model of the sharing economy. In this approach, individuals can act as "micro-entrepreneur" consumers and suppliers, as in the case of eBay.

Indeed, some authors, including Muñoz and Cohen (2018) as well as Sauvé and his collaborators (2016), argue that due to its transformative aspect, the sharing economy could lead to a more sustainable and circular economy.

4.5. Governance Model

While most sharing economy businesses follow a traditional governance model, new management methods are emerging among these new entrepreneurs. Research by Muñoz and Cohen (2018) shows that the recent generation of entrepreneurs is open to new ways of governance. Some entrepreneurs innovate in their financing methods with crowdfunding from their users in exchange for benefits such as discounts on products and services, gifts, and more. Others adopt a collaborative governance approach by involving users in business decisions and even allowing them to become co-owners of the platform.

4.6. Platform Type

One characteristic of sharing economy models is the type of digital platform used, which refers to the type of players connected to the bilateral market or intermediary (Cohen and Kietzmann, 2014; Muñoz and Cohen, 2018; Wruk et al., 2019). There are various examples of peer-to-peer platforms, which can facilitate crowdfunding, knowledge exchange, or the sharing of goods such as carpooling among consumers, as well as the sharing of specialized equipment, unoccupied premises, or even access to transport trucks. Some entrepreneurs use this type of platform to gain access to heavy equipment, particularly in the construction industry. While the sharing economy often involves "peer-to-peer" models, there are other models that connect different actors. For example, when companies like Rent the Runway or Bixi try to optimize recently acquired assets by making them available to consumers. Therefore, these companies use a digital platform allowing sharing between the company and consumers "Business to Consumer platforms".

4.7. Resource Type

The type of resources represents a characteristic dimension of the sharing economy that has been identified in the literature (Wruk et al., 2019). Sharing economy models involve either tangible products or intangible services or resources. According to Botsman and Rogers (2010), not only physical goods but also less tangible assets can be shared. Actors with similar interests can share and exchange time, space, knowledge, and even skills, for example, through platforms like Skillshare. The sharing economy promotes the exchange and circulation of knowledge. For example, companies like Airbnb and Uber use complex digital platforms to support rapid information and knowledge dynamics to increase the efficiency of resource use. This efficiency is mainly linked to the sharing of knowledge between users and suppliers of the good through these platforms. The use of digital platforms in the context of the sharing economy expands the possibilities of access to external information, which presents a challenge for individuals and companies to absorb knowledge from the network to which they belong. How actors within this economy deploy this dynamic capacity to realize the potential of their business remains a question for study. So far, studies that have investigated knowledge related to the sharing economy have focused on knowledge-related risks (Zieba and Durst, 2018) and the importance of organizational absorptive capacity (Bin et al., 2020) and individual absorptive capacity (Zhou and Park, 2021) in the sharing economy. Companies operating in the sharing economy are thus faced with various potential knowledge-related risks, such as the lack or absence of rules to operate better in this economy (Zieba and Durst, 2018). Bin et al. (2020) have shown that the absorptive capacity of knowledge has a positive and significant impact on the willingness of companies to implement crowd logistics.

Finally, Zhou and Park (2021) point out that in the process of creating new businesses, the entrepreneur happens to be the key factor in the dissemination of knowledge. Therefore, their ability to absorb knowledge, recognize an opportunity, and use resources to bring new inventions to market is highly coveted.

4.8. Money Change

Although individuals or entrepreneurs can receive monetary compensation in exchange for the use of a good or service, certain exchanges can take place without financial compensation, but instead using tokens, time credits, or other non-monetary units of measure. In some sharing economy models that are based more on a social or environmental mission, exchanges are even free and without compensation (Boons and Bocken, 2018; Wruk et al., 2019).

4.9. Property

Access to ownership versus transfer of ownership represents another dimension related to the characteristics of the sharing economy. According to Wruk and his colleagues (2019), the characteristics associated with the transfer or non-transfer of assets differentiate the various sharing economy models. For example, eBay's model essentially supports the transfer of goods to a new useful life. Other sharing economy models, such as Airbnb, are based on access to ownership for a period of time rather than transfer of ownership.

4.10. Sharing Scope

Finally, the last dimension revealed during the analysis of the literature deals with the scope of sharing. Boons and Bocken (2018) argue that sharing economy models target either individual actors, local actors, or the general public. Wruk et al. (2019), on the other hand, discuss the scope of sharing by distinguishing exchanges at the local, regional, national, and global scales. The entrepreneurial ecosystem linked to the sharing economy, therefore, has several characteristics that differentiate it from traditional entrepreneurial ecosystems. Social, ecological, and economic values largely influence this ecosystem, creating an environment conducive to entrepreneurial development. Although debates on the different dimensions of the sharing economy in the literature continue, it is clear that a wide variety of business model possibilities are available to entrepreneurs (Wruk et al., 2019). However, all of these options come with a certain downside. Unlike conventional entrepreneurial ecosystems, entrepreneurs operating in the sharing economy cannot rely on established models or base their decisions on already determined practices. The analysis of the literature made it possible to identify not only ten characteristic dimensions of the sharing economy but also the motivations of the entrepreneurs who adhere to it.

5. STAKEHOLDER MOTIVATIONS

Individuals embrace the sharing economy for various financial reasons such as saving money, time, or space, but also because they believe it's the right thing to do. Some reasons are therefore based on social or ecological motivations. Although there is no consensus in the literature on the motivations of stakeholders to use the sharing economy (Mair and Reischauer, 2017), certain perspectives emerge. Wruk et al. (2019) identified three perspectives in which entrepreneurs can join the entrepreneurial ecosystem associated with the sharing economy: an alternative economic model, a model based on the transition to sustainability, and an innovative business model.

5.1. Alternative Economic Model

The first perspective presents the sharing economy as motivated to provide an alternative economic model to existing economic models (Wruk et al., 2019). This alternative model, based

mainly on social values, aims to review production and the economic system in a more inclusive, collaborative, and fair way with society. From this perspective, the entrepreneurial ecosystem linked to the sharing economy places more emphasis on social values such as collaboration, participation, solidarity, and equality, compared to the economic values of more traditional ecosystems. This alternative economic model modifies both the collaborative system of production and resource management and governance. Moreover, Weitzman (1984) argues that companies promoting profit-sharing with their employees adopt this perspective. Other authors, like Benkler (2017) and Rifkin (2014), mention that not only will the sharing economy gain importance in the coming years, but it could even bring about the end of capitalism.

5.2. Model Based on a Transition to Sustainability

The second perspective perceives the entrepreneurial ecosystem linked to the sharing economy as a transition towards sustainability (Kathan et al., 2016; Wruk et al., 2019). In this perspective, which focuses on ecological values, consumer behavior changes to achieve a sustainable economy (Botsman and, Rogers, 2010). Indeed, some sharing economy models are based on access to the use of goods rather than ownership. Shared access to goods reduces consumption and pollution. In this sharing economy perspective, the motivations of active stakeholders are essentially based on ecological reasons for sustainable consumption (Hamari et al., 2016).

5.3. Innovative Business Model

The third perspective views the sharing economy as an opportunity for entrepreneurs to innovate in their business model by identifying opportunities and creating value (Wruk et al., 2019). From this perspective, sharing economy entrepreneurs are driven by economic values. Thus, they wish to review business models to create value from private or underutilized resources (Hamari et al., 2016). Moreover, Kathan et al. (2016) argue that the sharing economy can be profitable, and the motivations of entrepreneurs are often oriented towards financial benefits. This perspective emphasizes the economic benefits of innovating in the business model. In summary, some entrepreneurs embrace the sharing economy as an alternative business model for social reasons, while others aim for the transition to sustainability for ecological reasons. There are also entrepreneurs who choose the sharing economy for more economic reasons to innovate and create value. Although these three perspectives seem to have distinct objectives, certain overlaps exist in the entrepreneurial ecosystem linked to the sharing economy. The sharing economy is sometimes based on a combination of social, ecological, and economic values.

6. AVENUES OF RESEARCH

The analysis of the literature has identified some promising avenues of research dealing with this new entrepreneurial ecosystem.

6.1. Study of new business models

The entrepreneurial ecosystem associated with the sharing economy comprises new forms of business (Laamanen et al., 2018). These models rely more on decentralized networks of independent contractors and subcontractors who communicate through digital platforms to share information, rather than on a traditional approach where activities and controls are centralized. Studying these new business models linked to the sharing economy offers an interesting research avenue to identify the most appropriate business models to deal with various traditional entrepreneurial ecosystems.

It would also be relevant to identify typical business models based on the perspectives adopted by entrepreneurs, such as an alternative economic model, a model based on the transition to sustainability, or the innovative business model. Analyzing these business models would thus help verify whether they align with social, ecological, and economic values.

6.2. Study of Collaborative Governance

Another interesting research avenue aims to study how these companies coordinate with various stakeholders such as customers, suppliers, digital platform owners, governments, and concerned citizens (Laamanen et al., 2018). Sharing economy business models require different forms of governance (Vaskelainen and Münzel, 2018). The study of this collaborative governance would make it possible to advance knowledge and identify best practices, which currently represent a gap in the literature.

6.3. Study of the Sharing Between Urban and Rural Areas

Sharing among individuals is not experienced in the same way in urban areas as in rural areas (Sekhar and Reddy, 2014). Hofstede et al. (2010) identifies the collectivist versus individualist approach as an important cultural dimension. This dimension applies not only to studying the cultural differences between countries, but also between regions, some of which are more urban, while others are more rural. Furthermore, Rooks et al. (2012) maintain that the closed networks found in rural areas are more focused on cooperation and the sharing of resources than the open networks found in large cities. Entrepreneurs in rural areas tend to be more collectivist. This collectivist culture compensates for certain constraints due to the difficulty of having access to resources. Open networks in urban settings generally provide entrepreneurs with more information and new ideas than closed networks. Therefore, urban entrepreneurs theoretically have easier access to resources than rural entrepreneurs, which can represent a challenge for them (Cowell et al., 2018). Given that the principles of sharing are not the same between these environments, it would be relevant to study the differences between the entrepreneurial ecosystems linked to the sharing economy in large cities compared to remote regions, taking into account population density and geographic distance.

6.4. Study of the Nature of Work in the Sharing Economy

Advancing knowledge of business models linked to the sharing economy requires studying the effects on the nature of work and the role of individuals (Laamanen et al., 2018). The sharing economy is changing the traditional employment relationship by promoting occasional, part-time, or full-time entrepreneurship. Digital platforms are driving these trends, which offer workers less job security and fewer social benefits like health care insurance or pension funds (Katz and Krueger, 2016). Verboven and Vanherck (2016) argue that these changes pose risks to employees' rights. Therefore, studying the socio-economic impacts on individuals as new entrepreneurs is essential to understanding the effects of this entrepreneurial ecosystem on them. In summary, the literature review highlights research avenues related to business models, governance, sharing in urban and rural areas, and socio-economic impacts on new entrepreneurs in the sharing economy.

7. CONCLUSION

In conclusion, the analysis of the literature on the sharing economy has identified ten dimensions that characterize this new entrepreneurial ecosystem: the degree of technological dependence, the role of the intermediary, the commercial approach, the approach to shared resources, governance model, type of platform, type of resources, money currency, property and scope of sharing. In addition, the sharing economy offers new opportunities for individuals to become entrepreneurs.

Without being exclusive, some of these entrepreneurs are motivated by financial reasons, while others are motivated by social or ecological reasons. Based on these different reasons, three perspectives emerged: the development of an alternative economic model, a model based on the transition to sustainability and finally an innovative business model. Indeed, the entrepreneur linked to the sharing economy aims to adopt one of these three perspectives or a mix of them. This research has identified four avenues for further research to advance knowledge on business models, governance, cultural differences between urban and rural areas, as well as the socio-economic impacts of the sharing economy on the entrepreneurial ecosystem.

LITERATURE:
1. Akbar, Y.H., Tracogna, A. (2018). The sharing economy and the future of the hotel industry: transaction cost theory and platform economics. *International Journal of Hospitality Management*, 71, pp. 91–101.
2. Apte, U. M., Davis, M. M. (2019). Sharing economy services: Business model generation. *California Management Review*, 61(2), pp. 104-131.
3. Barbu, C. M., Bratu, R. S., Sirbu, E. M. (2018). Business models of the sharing economy. *Review of International Comparative Management*, 19(2), pp. 154-166.
4. Benkley, Y. (2017). Peer production, the commons, and the future of the firm. *Strategic Organization*, 15(2), pp. 264–274.
5. Berry, L., Venkatesh S., Parish, J. T., Cadwallader, S., Dotzel, T. (2006). Creating new markets through service innovation. *MIT Sloan Management Review*, 47(2), pp. 56-63.
6. Bin, H., Zhao, F., Xie, G., Huang, L., Wang, H., Zhu, R., Jiang, L. (2020). Crowd-Sourcing a Way to Sustainable Urban Logistics: What Factors Influence Enterprises' Willingness to Implement Crowd Logistics?. *IEEE Access*, 8: 225064-225075.
7. Boons, F., Bocken, N. (2018). Towards a sharing economy – Innovating ecologies of business models. *Technological Forecasting & Social Change*, 137, pp. 40-52.
8. Botsman, R., Rogers, R. (2010). *What's mine is yours: The rise of collaborative consumption*. New York: Harper Business.
9. Cheng, M., (2016). Sharing economy: a review and agenda for future research. *International Journal of Hospitality Management*, 57, pp. 60–70.
10. Chopra, S., Lariviere, M. A. (2005). Managing service inventory to improve performance. *MIT Sloan Management Review*, 47(1), pp. 56-63.
11. Cohen, B., Kietzmann, J. (2014). Ride on! Mobility business models for the sharing economy. *Organization and Environment*, 27(3), pp. 279–296.
12. Cowell, M., Lyon-Hill, S., Tate, S. (2018). It takes all kinds: understanding diverse entrepreneurial ecosystems. *Journal of Enterprising Communities: People and Places in the Global Economy*, 12(2), pp. 178-198.
13. Davis, M.M., Field, J., Stavrulaki, E. (2015). Using Digital Inventories to Create Customer Value, *Service Science*, 7/2 (April): pp. 83-99.
14. Demary, V. (2015). Competition in the sharing economy, Cologne institute for economic research, *IW Policy paper*, 19, pp. 1-27.
15. Dharwadkar, B., George, G., Brandes, P. (2000). Privatization in emerging economies: an agency theory perspective. *Academy of Management Review*, 25 (3), pp. 650–669.
16. Geiger, A., Horbel, C., Germelmann, C.C. (2018). Give and take: how notions of sharing and context determine free peer-to-peer accommodation decisions. *Journal of Travel and Tourism Marketing*, 35 (1), pp. 5–15.
17. Gibbs, C., Guttentag, D., Gretzel, U., Yao, L., Morton, J. (2018). Use of dynamic pricing strategies by Airbnb hosts, *International Journal Contemporary Hospitality Management*, 30 (1), pp. 2–20.

18. Gonzalez-Padron, T.L. (2017). Ethics in the sharing economy: creating a legitimate marketing channel. *Journal of Marketing Channels*, 24 (1–2), pp. 84–96.
19. Goudin, P. (2016). *The Cost of Non-Europe in the Sharing Economy: Economic, Social and Legal Challenges and Opportunities*. European Parliamentary Research Service. From https://www.europarl.europa.eu/RegData/etudes/STUD/2016/558777/EPRS_STU%28201 6%29558777_EN.pdf
20. Hamari, J., Sjöklint, M., Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science and Technology*, 67(9), pp. 2047–2059.
21. Henten, A., Windekilde, I. (2016). Transaction costs and the sharing economy. *INFO*, 18(1), pp. 1-15.
22. Hofstede, G., Hofstede, G. J., Minkov, M. (2010). *Cultures and Organizations: Software of the Mind*. Third Edition, New York: McGraw Hill.
23. Kathan, W., Matzler, K., Veider, V. (2016). The sharing economy: Your business model's friend or foe?. *Business Horizons*, 59: pp. 663-672.
24. Katz, L. F., Krueger, A. B. (2019). The rise and nature of alternative work arrangements in the United States, 1995–2015. *ILR Review*,72(2), pp. 382-416.
25. Laamanen, T., Pfeffer, J., Rong, K., Van de Ven, A. (2018). Editors' Introduction: Business Models, Ecosystems, and Society in the Sharing Economy. *Academy of Management Discoveries*, 4(3), pp. 213–219.
26. Lasmar, J. E. L., Gandia, R. M., Sugano, J. Y. de Souza, T. A., Rodriguez, D. Z. (2019). New business models and the sharing economy: impacts and challenges for the traditional automotive industry. *International Journal of Automotive Technology and Management*, 19(3/4), pp. 301-320.
27. Mair, J., Reischauer, G. (2017). Capturing the dynamics of the sharing economy: Institutional research on the plural forms and practices of sharing economy organizations. *Technological Forecasting and Social Change*, 125, pp. 11–20.
28. Matofska, B. (2015), *What we know about Global Sharing Economy*. From http://www.laboratorioecoinnovacion.com/comunicacion/ALERTAINFORMATIVA/1/W hat-we-know-about-the-Global-Sharing-Economy-2015-Benita-Matofska.pdf.
29. Muñoz, P., Cohen, B. (2018). A Compass for Navigating Sharing Economy Business Models. *California Management Review*, 61(1), pp. 114–147.
30. Oh, S., Moon, J. Y. (2016). Calling for a Shared Understanding of the Sharing Economy. *Proceedings of the 18th Annual International Conference on Electronic Commerce: e-Commerce in Smart connected World,* August 17-19, Suwon, Republic of Korea.
31. Price Waterhouse Coopers, (2015). *Sharing or paring: Growth of the sharing economy*. From https://www.pwc.com/hu/en/kiadvanyok/assets/pdf/shar- ing-economy-en.pdf.
32. Rifkin, J. (2014). *The zero marginal cost society: The internet of things, the collaborative commons, and the eclipse of capitalism*. New York: St. Martin's Press.
33. Rooks, G., Szirmai, A., Sserwanga, A. (2012). Network Structure and Innovative Performance of African Entrepreneurs: The Case of Uganda. *Journal of African Economies*, 21(4), pp. 609–636.
34. Sauvé, S., Normandin, D., McDonald, M. (2016). *L'économie circulaire : Une transition incontournable*. Montréal: Les Presses de l'Université de Montréal.
35. Schor, J. (2014). Debating the sharing economy. *Journal of Self-Governance & Management Economics*, 4(3), pp. 7–22.
36. Sekhar, A. C., Reddy, B. G. (2014). Individualistic and Collectivistic Orientations of Rural and Urban Professional Students and Their Attitudes Towards Fairness in Appraisals and Procedures in HRM Practices. *Research Paper Psychology*, 3(5), pp. 209-210.

37. Siuskaite, D., Pilinkiene, V., Zvirdauskas, D. (2019). The Conceptualization of the Sharing Economy as a Business Model. *Inzinerine Ekonomika-Engineering Economics*, 30(3), pp. 373–381.
38. Vaskelainen, T., Münzel, K. (2018). The effect of institutional logics on business model development in the sharing economy: The case of German carsharing services. *Academy of Management Discoveries*, 4(3), pp. 273-293.
39. Verboven, H., Vanherck, L. (2016). The sustainability paradox of the sharing economy. *uwf UmweltWirtschaftsForum*, 24(4), pp. 303-314.
40. Weitzman, M. L. (1984). *The share economy: Conquering stagflation*. Cambridge, MA: Harvard University Press.
41. Williamson, O. E. (1975). *Markets and Hierarchies: analysis and antitrust implications*. New York: Free Press.
42. Wruk, D., Oberg, A., Klutt, J., Maurer, I. (2019). The Presentation of Self as Good and Right: How Value Propositions and Business Model Features are Linked in the Sharing Economy. *Journal of Business Ethics*, 159(3), pp. 997- 1021.
43. Yasir, M., Majid, A. (2017). Impact of knowledge management enablers on knowledge sharing: Is trust a missing link in SMEs of emerging economies?, World Journal of Entrepreneurship. *Management and Sustainable Development*, 13(1), pp. 16-33.
44. Zieba, M., Durst, S. (2018). Knowledge risks in the sharing economy. *Knowledge management and Organizational Learning*, 6, pp. 253-270.
45. Zhou, Y., Park, S. (2021). The Regional Determinants of the New Venture Formation in China's Car-Sharing Economy. *Sustainability*, 13(74), p.1-21.

ASSESSMENT DESIGN IN MOROCCAN TERTIARY EDUCATION: CURRENT PRACTICES AND FUTURE PERSPECTIVES

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ABSTRACT

Assessment design is an important component of instruction; therefore, any future reform in the Moroccan educational system should reconsider the current assessment design practices in the Moroccan tertiary education. The present study seeks to explore assessment design practices in Moroccan faculties of letters and humanities in three state Moroccan universities (Moulay Ismail University, Meknes; Ibn Tofail University, Kenitra; and Hassan II University, Ain Chock, Casablanca). To collect the necessary data for the present study, document analysis method was used. The spoken English, grammar and paragraph writing tests designed for S1 students during the fall semester of the academic year 2020/ 2021 were described and analysed to find out the techniques adopted by Moroccan Professors in designing assessment tasks for their students. In addition, the validity and authenticity of the tests were investigated using Brown's principles of language assessment. The findings have shown that professors at Moroccan Universities used different techniques to design tests for their students except one university whose professors used only multiple-choice questions to design all the tests. Besides, the findings have shown that most tests designed for Moroccan students at the faculties of letters and humanities lack both validity and authenticity, two of the main criteria of language assessment.
Keywords: authenticity, assessment design, assessment tasks, validity

1. INTRODUCTION

Students do not fully learn what their teachers teach. If they learned all that they were taught, there would be no need for assessment. The purpose of assessment is, therefore, to bridge the gap between learning and teaching. Any students taking any form of learning would be, in one form or another, subject to assessment. A well-designed test, moreover, can act as an engine which finally drives active student learning (Cowan, 2005). Despite the various writings on assessment practices, academics appear to rely on traditional pen and paper examination to determine students' knowledge (Careless et al., 2010; Duncan & Buskirk-Cohen,2011; Gilles et al., 2011; Postareff et al., 2012). Other authors state that testing is a passive process, a fact which adversely influences learning (Ertmer & Newby, 2013). A possible cause of this problem is the lack of awareness regarding assessment methods across higher education institutions (Gilles et al., 2011; Postareff et al., 2012). The present study tries to bring awareness to assessment design practices in higher education in Morocco. Only with awareness will instructors learn the value of assessment, its effect on learning, and its power of making changes (Postareff et al., 2012). To reach this end, the researchers examined the tests designed for S1 students by university professors in the departments of English studies at three Moroccan state

Universities during the fall term of the academic year 2020/ 2021. This end of term exam is of great importance in the educational life of university students. By passing this exam, students will be able to continue their studies to further educational levels. Therefore, at this level, test designers need to pay attention at least to the tests' content validity and authenticity in order to make good and effective test items. Content validity helps the test reflect the measured skills which should be performed by students. Seif (2004) explains that if a test does not have content validity, the test designer may not be able to determine whether or not students achieve the set of learning objectives in a particular level of education. Besides, given the crucial importance of authenticity in building figures of the target language used in real-life situations (Brown, 2004), test designers should also make sure they design authentic tests. Students will be confused to use language in context unless test items reflect authenticity. The researchers analysed items of many tests in order to get more insights into the different approaches adopted by university professors in the departments of English studies to design tests for their students and the extent to which these tests are valid and authentic.

2. LITERATURE REVIEW
2.1. A brief history of language testing
Historically speaking, "as with other fields of education, language teaching was subject to the influence of changes in the theories found in the supporting disciplines of linguistics, psychology, and second language learning" (Richards & Rogers, 2016, p.38). In this regard, language testing practices have followed the shifting sands of teaching methodology (Brown & Abeywickarama, 2010). Spolsky (1978) divides historical trends in language testing into three main periods, namely the 'prescientific period', the "psychometric structuralist" period and the "integrative-sociolinguistic" period. The 'prescientific period' was the one prior to the early 1950s. During this period, language teaching was not a distinct discipline; therefore, language testing followed whatever general principles of testing were available in the humanities and social sciences (Brown, 1987, p.227). The "psychometric structuralist" period lasted from the early 1950s through the late 1960s (ibid, 1987). This era was characterised by the influence of behavioural psychology and structural linguistics. Both traditions, according to Brown and Abeywickarama (2010), "emphasized sentence-level grammatical paradigms, definition of vocabulary items, and translation from (L1) to second language (L2), and placed only minor focus on real-world authentic communication" (p.14). Likewise, testing focused on specific linguistic elements such as the phonological, grammatical, and lexical contrast between two languages (Lado, 1961, cited in Brown, 1987). The third period, the "integrative-sociolinguistic" period, started from the 60s. As a result of the dissatisfaction with behaviourism and structuralism, there was a call to focus on proficiency rather than the mere mastery of language structures (Richards & Rogers, 2016). Chomsky, for example, demonstrated that structural theories of language were incapable of accounting for the fundamental characteristics of language. British applied linguists, in turn, also emphasized another dimension of language that was inadequately addressed in approaches to language teaching at that time-the functional and communicative potential of language (ibid, 2016). In other words, researchers felt the need for communicative competence, a construct proposed by Hymes (1973) to describe a person's knowledge of how to use language appropriately as a communicative resource (Richards, 2015). In the same vein, testers were realising that "the whole of the communicative event was considerably greater than the sum of its linguistic elements" (Clark, 1983, p.432). Therefore, language testing specialists, such as John Oller, began to find out ways of testing second language learners' communicative competence (Brown, 1987).

2.2. Types of assessment

In their everyday practices, teachers need to assess their students learning. For this reason, they use a variety of assessment measures and practices depending on the purpose of assessment. Two types of assessment that have largely been discussed in the literature are summative and formative assessment.

2.2.1. Summative assessment

Summative assessment reflects a more traditional approach to assessing educational outcomes (Shute & Becker, 2010). It refers to forms of assessment that take place at the end of a course, unit, or period of learning so as to measure what students have learned (Richards, 2015; El khatib & Khaled, 2002; Driscoll & Wood, 2007; Brown & Abeywickrama, 2010). In addition to recording students' proficiency, McMillan (2018) opines that summative assessments are used "to give students grades, to report to parents, for selection into special programs, for conferring of honours, for establishing a record of performance used by colleges for admissions and hiring by employers, accountability, and recently, as evidence of student learning to evaluate teachers" (p.170). According to Van der Merwe (2011), the forms of assessment mostly associated with summative assessment are tests and examinations. According to Richards (2015), these types of tests are referred to as achievement tests, of which the list can be extended to include assignments, end-of-course tests, projects and portfolios.

2.2.2. Formative assessment

Despite its importance in the educational process, summative assessment has some negative effects in terms of pedagogy (Yüksel & Gündüz, 2017). First, the education system becomes more result-oriented in the sense that students focus on getting higher exam results and instructors may face a process of education for exams with this perspective (Williams, 2014). Second, summative assessment limits the usage percentage of feedback and causes lack of learning cycle in the self-assessment point of the student (ibid, 2014). Finally, this type of assessment is more sequential (Cumming, 2009, cited in Fulcher, 2012). It starts with establishing educational goals and objectives, then constructing the activities and tasks and finally evaluating how well students have succeeded (Fulcher, 2012). However, since 1980s, there has been a strong interest in the role that assessment can have during the learning process, rather than at the end of it (ibid, 2010). Black & William (1998) initiated the move towards a more process-oriented assessment called formative assessment. This type of assessment, also known as assessment for learning, provides feedback and information about the instructional process, while learning is taking place (Khatib & Khaled, 2002). The core of formative learning is to define the gap between the real performance and the desired performance (Yüksel & Gündüz, 2017). In other words, the intent is to close the "gap" between what students need to know and their current level of knowledge by establishing a path to facilitate student learning (Furtak, 2009). The main foundation of formative assessment is, therefore, the feedback that is given to students to help them be aware of existing gaps in their learning (Boston, 2002).

2.2.3. Norm-referenced and criterion-referenced tests

In 1963, Glaser explored two variations of educational standard evaluation tests wherein they could be applied. One of these standardized evaluation tests is based on what is generally referred to as norm-referenced evaluation tests. This approach characterises what Spolsky (1978) has referred to as the 'psychometric-structuralist' period of language testing (Johnson, 1989). In this measurement criterion, learners' performance levels are scored and interpreted with respect to each other (Elliott, Zivanai & Herbert, 2017). For Stiggins (1994), norm-referenced measurement tests are designed and structured in order to highlight achievement differences between and among students.

The other major approach to measurement is referred to as criterion-referenced testing. Instead of grading one student with others, a teacher can compare a student's performance with pre-established performance standards (Russell & Airasian, 2012). In criterion-referenced testing, the learner's performance is measured according to a particular standard or criterion that has been agreed upon and the learner must reach this level of performance to pass the test (Richards, 2015). Similarly, Johnson (1989) asserts that because criterion-referenced testing provides information about the mastery of a given content domain or criterion of performance, tests scores in this measurement approach are reported and interpreted with reference to a specific context domain or criterion of performance.

2.3. Principles of language assessment

Among the most important principles which ensure quality in summative assessment are reliability and validity (Richards, 2015). Validity and reliability are concerned with "the consistency and accuracy of the inferences teachers make about students from assessment information" (Santrock, 2011, p.571). Linked to validity, the principles of practicality, authenticity and washback are other criteria that form the pillars of high-quality assessment (Brown, 2004; Bachman & Palmer, 1996).

2.3.1. Validity

By far the most complex criterion of an effective test, and arguably the most important principle, is validity, i.e., the extent to which assessment measures what it is intended to measure and the appropriateness of inferences form and uses of information (McMillan, 2011). The technical procedures for validating tests are complex and require specialised knowledge; however, two major types of validation are extremely important: content validity and face validity. A test is valid if it "measures what it is supposed to measure and nothing else. This is known as content validity" (Richards, 2015, p.668). Content validity is also referred to as content-related evidence. If a test actually samples the matter about which conclusions are to be drawn, and if it requires the test taker to perform the behaviour that is being measured, it can claim content-related evidence or validity (Hughes, 2003; Mousavi, 2002). Based on these views about content validity, the objective is the assessment of a person's ability to speak a second language in a conversational setting, asking the learner to answer paper-and-pencil multiple-choice questions requiring grammatical judgements will not be likely to achieve content validity. Similarly, when the objective of a course is manyfold, i.e., it aims at testing ten objective, for example, and only two of the intended objectives are attended to by the test, the "content validity suffers" (Brown, 2004, p.23). Another concept very closely related to content validity is face validity. It refers to the extent to which "students view the assessment as fair, relevant, and useful for improving learning" (Gronlund, 1998, p.210). Face validity refers to "the degree to which a test looks right and appears to measure the knowledge or abilities it claims to measure, based on the subjective judgment of the examinees who take it" (Mousavi, 2002, p.244).

2.3.2. Authenticity

Authenticity is another major principle of language testing. This critical quality of language tests has not generally been discussed in language testing textbooks even though it has been debated among language testing researchers. Carroll (1961) was one of the first proponents of testing which focused on the total communicative effect of an utterance as it would in a non-test situation. This could be considered one of the earliest prescriptions for authenticity and a starting point for the operationalisation of this concept in language testing. Later, Bachman (1990) defined authenticity in terms of Real Life or RL approach, which considers the extent to which test performance replicates some specific non-test language performance or mirror the

reality of non-test language use in a test situation for the purpose of determining utility. Similar definitions of authenticity were provided by other scholars. For example, authenticity was defined as "the degree of correspondence of the characteristics of a given language test task to the features of a target language task" (Bachman & Palmer, 1996, p.23). Brown (2004) also states that "when we make a claim for authenticity in a test task, we are saying that this task is likely to be enacted in the real world" (p.28). According to him, in a test, authenticity may be presented in the following ways:

- "The language in the Test is as usual as possible,
- Items are contextualized rather than isolated,
- Topics are meaningful (relevant, interesting) for the learner,
- Some thematic organization to items is provided, such as through a storyline or episode,
- Tasks represent, or closely approximate real-world tasks" (ibid, 2004, p.28).

3. METHODOLOGY

3.1. Research questions
This study was shaped based on the following research questions:
1) What are the techniques used by Moroccan university professors in designing assessment tasks for their students?
2) Do the tests designed for Moroccan students at Moroccan universities have content and face validity?
3) Are the tests designed for Moroccan students at Moroccan universities authentic?

3.2. Data collection method
The data for the present study consisted of the tests designed by university professors in the departments of English studies at Moulay Ismail university, Hassan II University, Ain Chock and Ibn Tofail University for S1 students during the fall semester of the academic year 2019/2020. First, after having obtained a list of all fall semester groups and the program of fall semester exams in the three institutions, the researchers then asked professors for samples of the tests designed for S1 groups in the following modules: paragraph writing, spoken English and grammar. To collect the data for this purely qualitative study, the main data collection method used was document analysis. The tests designed for S1 students were described and analysed to find out the techniques used by Moroccan professors in designing assessment tasks for their students. In addition, validity and authenticity of the assessment tasks were investigated applying Brown' criteria of language assessment.

3.3. Data analysis
The present study was conducted using document analysis which is a systematic procedure for reviewing or evaluating documents. Like other analytical methods in qualitative research, document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Corbin & Strauss, 2008). In the present study, the primary documents were the tests designed by university professors in the department of English studies at the three state universities under investigation for S1 students during the fall semester of the academic year 2020/ 2021. For the purpose of the present study, the tests were grouped according to the modules studied. After describing each test separately, the researchers evaluated the tests administered and discussed the extent to which they reflect validity and authenticity, two of the most important principles of assessment design.

4. FINDINGS
The description and analysis of the tests designed for S1 students at the faculties of letters and humanities in the three universities revealed that test designers used different techniques in

designing tests for their students. The following section provides a detailed description of the paragraph writing, spoken English and grammar tests as well as the different techniques used by test designers at Moulay Ismail University, Hassan II University, ain Chock and Ibn Tofail University.

4.1. Faculty of Letters and Humanities, Moulay Ismail University, Meknes
4.1.1. Spoken English
Only two spoken English tests were designed for S1 students. The first test contained six tasks. In the first one, students were asked to transcribe the words '*resilience, ewe, mucus, thorough and prerequisite*' phonetically. In the second one, they had to give the formal equivalent of the following words and phrases: *to go up, to do well, to free, by chance, rich*. In the third task, students were required to give the equivalent in American English of the words: *crisps, trainers, holidays, a chemist, pavement*. The fourth task contained words, of which the homophones students had to look for. As for the fifth task, students were required to explain the idioms: *Add insult to injury and Blessing in disguise*. In the last task, students were asked to explain the following proverbs: '*Absence makes the heart grow fonder' and 'Beauty is in the eye of the holder*'. The second test, however, contained only the following question: Consonants need to be described. Say what these parameters are, explain them and give examples. The following table summarises the techniques used in designing spoken English tests:

Spoken English teacher made tests	T Techniques and methods
Test1	- Providing the correct phonetic transcription - Providing equivalents - Providing homophones - Explaining idioms - Explaining proverbs
Test2	- Direct question

Table 1: Techniques and methods used to assess spoken English tests

4.1.2. Paragraph writing
Three tests were designed by the professors who taught paragraph writing to S1 students during the academic year 2020/ 2021. In the three tests, students were required to write a paragraph about the suggested topics. In the first test, the topics were: *sport, music, friendship, travelling and online learning*. In the second test, students were given the following choices: *importance of blood donation, saving water, child labour, corruption, and legalising cannabis*. In the last test, students were given the choice to describe a school whose memory is still vivid in their mind or write about a character in a story or a novel that they had read. The techniques used to design paragraph writing tests are summarised in the following table:

Paragraph writing teacher made tests	Testing techniques and methods
Test1	- Multiple-choice questions - Writing a paragraph
Test 2	- Writing a paragraph
Test 3	- Writing a paragraph

Table 2: Techniques and methods used to assess paragraph writing tests

4.1.3. Grammar
Three grammar tests were designed by professors who taught this module at Moulay Ismail University. The first test was made up of four tasks. In the first one, students were required to put the verbs between brackets in their correct forms. In the second, they had to complete the sentences with an appropriate pronoun and in the third task students were required to complete the sentences with a-an-the or Ø. Finally, in the last task, students had to put the words in brackets in the correct form. In the second test, students were asked to do three tasks. In the first task, they had to read the text and then put the verbs in brackets into the correct tense. In the second one, they had to read the paragraph and indicate the grammatical category of the underlined words or phrases and in the last task, students were required to write two sentences including an intensive pronoun and a coordinating conjunction. The last test designed for S1 students contained three tasks as well. The first was a multiple-choice task in which students were required to choose the correct answer from the four choices. The second task was a conversation that students had to complete with the appropriate tense. Finally, in the last task students had to circle the letter of the underlined word or phrase that is not correct. The following table gives a summary of the techniques used by professors to design grammar tests:

Grammar teacher made tests	Testing techniques and methods
Test 1	-Providing the correct verb form/ tense -Sentence completion -Gap filling
Test 2	-Providing the correct verb form/ tense -Identifying grammatical category -Providing the correct sentence form/structure
Test 3	-Multiple choice -Providing the correct verb form -Error identification

Table 3: Techniques and methods used to assess grammar tests

4.2. Faculty of Letters and Humanities Ain Chock, Hassan II University, Casablanca
4.2.1. Spoken English
Two spoken tests were designed for S1 students at Hassan II University, Ain Chock. The first test contained four tasks. In the first task, students were required to give definitions of prosody and ellipsis, two aspects of speech, providing some examples for illustration. The second task was about phonetic transcription. Students were given five sentences and were asked to transcribe them phonetically. In the third task, students were asked to provide the orthographic transcription of the three phonetic transcriptions provided. In the last task students were asked to fill in a chart (e.g., Apple, Number of syllables: 2, Stress: On the first syllable, Stress rule: Most two-syllable nouns have stress on the first syllable). Students were asked to do the same with the following words: seafood, understand, population, picturesque, import, responsibility). As for the second test, it contained four questions. In the first question, students were asked to transcribe the odd word that does not belong to the set (i.e., the one with the different vowel sound) as in the following example: (food – mood – blood – shoot). In the second question, students were asked to provide the IPA transcription of the words: supernatural, obligatory, associate, secretary, show the syllable boundaries in each word and assign primary stress in each word. In the third question, students were required to change the vowel sound in the following words to constitute minimal pairs: hear, thyme, coat. The last question was about phonetic transcription. Students were given a small passage and were asked to provide its IPA

transcription. Based on the description above, the main techniques used to design the spoken tests can be summarized as follows:

Spoken teacher made tests	Techniques
Test 1	- Defining concepts -Transcribing sentences phonetically -Providing orthographic Transcription -Chart filling
Test 2	- Transcribing words -Chat filling (Identifying syllable boundaries/ Assigning primary stress) - Providing IPA transcription

Table 4: Techniques and methods used to assess spoken English tests

4.2.2. Paragraph writing

Two paragraph-writing tests were designed for S1 students. The first one contained three tasks. Task A contained five sentences which students were required to connect to make one sentence (for example: *Our mission seemed impossible. We tried our best to accomplish it*.). In the second task, students were given a short passage and were asked to identify the mistakes and correct them. In the last task, students were asked to decide which of the six sentences provided was a good topic sentence, then use it to write a well-organized paragraph.

The second paragraph-writing test contained only two tasks. In the first one, students were required to choose one of the following topics and write about 100 words about it:

a) How do you choose what you read?

b) Can school arouse in pupils some particular interest that may later become a passion?

In brief, the following table provides a summary of the techniques used to design the paragraph writing tests at Hassan II University, Ain Chock:

Teacher made tests	Techniques and methods
Test 1	- Sentences combining - Error identification and correction - Identifying the best topic sentence - Writing a paragraph
Test 2	- Open-ended questions - Direct questions - Writing a paragraph

Table 5: Techniques and methods used to assess paragraph-writing tests

4.2.3. Grammar

Two grammar tests were designed for S1 students at Hassan II University, Ain Chock. Both tests were made up of three tasks. The first task was about conditional sentences. Students were required to fill in the gaps with the appropriate tense to complete each sentence. The second task was about articles. Students were given sentences and were asked to fill in the gaps with the appropriate articles. The last task in both tests was about tenses. In fact, this task was the longest in both tests and students were required to use the appropriate tense of the verb in brackets in the sentences given. Interestingly, the designer of the second test developed seven variants of this test by changing the sentences included in each test and also by changing the order of the tasks.

The techniques used to design these tests are as follows:

Grammar teacher-made tests	Techniques and methods
Test 1	- Providing the correct verb tense / form - Gap filling
Test 2	- Providing the correct verb tense/ form - Gap filling

Table 6: Techniques and methods used to assess grammar tests

4.3. Faculty of letters and Humanities, Ibn Tofail University, Kenitra
4.3.1. Spoken English
All tests in this faculty were designed differently. Professors who teach the same module agreed on one common test and developed at least three versions. In addition to that, all the tests were made using multiple-choice questions. The spoken English tests for example were designed adopting this method of assessment design. Students were given four exam versions and were asked to answer only one version. All exams contained forty questions in total about the following themes: identifying diphthongs, identifying words containing silent letters, choosing the correct phonetic transcription or syllabification of a word, identifying words that contain long form of the vowel, third person singular 'ed' transcription, identifying sounds that are pronounced differently, identifying silent letters, spotting odd phonemes, etc.

4.3.2. Paragraph writing
The paragraph writing tests designed by professors at Ibn Tofail University adopted the same method. Students were given four different options and were asked to choose one option and answer twenty questions. The themes of the questions were as follows: identifying error type, identifying sentence type, identifying incorrect sentences, choosing the best topic sentence, identifying irrelevant sentences, choosing the correct option to improve sentences, choosing the correct order of a paragraph and finally identifying sentence type.

4.3.3. Grammar
Like the previous tests, grammar tests were designed using only multiple-choice questions. Students had to choose one of the four versions provided and answer the forty questions included. The main topics assessed were articles, quantifiers, parts of speech, plural forms, prepositions, comparative forms, transition words, etc. The only technique used to design all the tests as mentioned earlier was multiple choice questions.

5. DISCUSSION
5.1. Validity
This section seeks to present and discuss the findings of the present study. The findings reported in this section are descriptive discussions based on the information obtained from the tests designed by Moroccan university professors in the departments of English studies at the three faculties for S1 students during the fall semester of the academic year 2020/ 2021 in the modules described above. The purpose of examining these tests is to explore how professors in the departments of English studies design assessment tasks for their students, the extent to which these assessment tasks are valid and authentic based on the criteria discussed earlier and the course description adopted by the departments of English studies at the Moroccan universities.

5.1.1. Spoken English
To determine the extent to which the spoken tests collected for the purpose of the present study have content validity, it is important to examine the objectives of teaching spoken English to

S1 students in Moroccan faculties of letters and humanities. The course description (2004) states that "the spoken English course is meant to help learners become effective communicators in English" (p.26). The components of the course can be summarised in the following objectives:

- Introduce students to both the American and British pronunciations in an attempt to help them become aware of the differences that exist between the two pronunciations and hence acquire an accurate accent.
- Introduce learners to various functions in various contexts. This will make students able to understand and express themselves in such situations as apologizing, making excuses, requesting, asking for favours, etc.
- Introduce learners to the most frequently used idiomatic expressions by native speakers of the target language.
- Make learners aware of the target culture through different themes for discussion.
- Improve learners' listening comprehension by making them listen to different genres of the spoken discourse (ibid, 2014).

Based on the objectives above, the course description (2014) states that:

- The spoken English course prepares students to function effectively in real-life situations. It includes functions such as opening and closing, introductions, invitations, apologising, giving and replying to compliments, requesting, making offers, etc. Idiomatic expressions are presented in the context in which they could be used. Discussion topics are based on readings, proverbs, and video clips. Through these, the students are encouraged to discuss the values and assumptions of the British and American cultures (p.27-28).
- The description of the spoken tests above urges us to question their validity. To start with, based on the objectives and content of the spoken English course, it is clearly evident that none of the objectives in the course description can be achieved using a written test. Validity of a spoken test means that the assessment should focus on measuring the language skills being assessed.

5.1.2. Paragraph Writing

Paragraph writing is an important component of S1 program at Moroccan faculties of letters and humanities. If students are able to write a well-structured paragraph and organise their ideas in a logical order, they will be able to express their thought in all the other components of the common core program in which they will be required to write a paragraph. In addition to that, writing a good paragraph initiates students to write a good essay. In brief, students will need to write a well-structured paragraph during the whole educational process at university. Before delving into the analysis of the paragraph writing tests mentioned above, we deem it relevant to look at the objectives and the content outlined in the course description for S1 students. The main objectives of the paragraph writing course for S1 students are:

- To enable students to learn how to write effective paragraphs. In addition to that, teaching paragraph writing for S1 students aims to explore and develop skills such as using specific and concrete language to make a point and stick to it, selecting good supporting details to create a convincing argument, organizing a paragraph in a way that best fits its purpose, and writing clear, error-free sentences to maximise the effectiveness of the writing (Course description, 2014, p.17).

Based on the objectives stated above, it could be confirmed that the paragraph writing tests designed for S1 students at Moulay Ismail University and Hassan II University, Ain Chock achieve both content and face validity.

All the tests designed for students in these institutions aim to measure students' ability to write an effective paragraph which is the core objective of the course. In this regard, Hughes (2003,) cited in Richards (2015), emphasises that "a valid writing test should test only writing ability and no other skills" (p.670), which is the case for all the paragraph writing tests designed for S1 students in the three institutions. However, the common tests designed for S1 students at Ibn Tofail University lack both content and face validity for many reasons. First, they contained only multiple-choice questions about knowledge related to sentence type, error identification, topic sentence identification, and finding the correct order in a paragraph; however, they fail to measure students' ability to write a paragraph. Second, the time allotted to do the activities included in the test is not enough bearing in mind that students were required to find the correct order of three paragraphs and answer seventeen other questions in only one hour.

5.1.3. Grammar
An in-depth analysis of the grammar tests under investigation makes it possible for us to conclude that assessment in all the grammar tests collected in the present study was done using the decontextualized discrete-point approach. The items used in all these tests belong to the traditional approaches to testing grammar. All the test designers at Moulay Ismail University and Hassan II University used either multiple-choice or gap-filling items. In addition, teachers at Ibn Tofail University used only multiple-choice items. Such formats test grammar knowledge, but they do not inform whether test takers can use grammar correctly in real-life speaking or writing situations. However, it is worth mentioning that some teachers did their best to ensure fairness among test takers. A professor at Hassan II University, for instance, designed seven variants of the same test. Another deficiency in some of the grammar tests under study lies in their inconsistency with the principle of validity. As mentioned earlier, "validity refers to whether or not the test really measures what it purports to measure" (Cohen, 2001, p.525). As for the previous modules, two types of evidence will be discussed in the grammar tests described above, viz. content validity and face validity. As has already been pointed out earlier, content validity is concerned with whether or not the "content of the test is sufficiently representative and comprehensive for the test to be a valid measure of what it is supposed to measure" (Hemming, 2001, p.94). To decide whether the grammar tests above have content validity or not, it is necessary to check whether or not they sample the content required to be measured in the course. A close analysis of these tests has revealed that they all sample the content indicated in the course description. All these tests were designed to test students' abilities in tenses and parts of speech. Similarly, all the grammar tests in the three institutions achieve face validity. Face validity will likely be high if learners encounter the criteria stated in the discussion section above. Based on these criteria, it could be said that all the grammar tests collected in this study have face validity. The only threat to face validity, not only for the grammar tests, but also all the tests described earlier, is the fact that professors do not mention the allotted time slot and the grading scale. The latter, however, is of paramount importance because it gives test takers an idea about the weight of each question.

5.2. Authenticity
The last assessment principle, which is worth discussing, is authenticity. According to Bachman & Palmer (1996), to be able to "justify the use of language tests, we should be able to demonstrate that performance on language tests corresponds to language use in specific domains other than the language test itself" (p.23). One aspect of demonstrating this pertains to the correspondence between characteristics of target language use tasks and those of the test tasks and it is this correspondence that is at the heart of authenticity. In this regard, Bachman & Palmer (1996) define authenticity as "the degree of correspondence of the characteristics of a given language test task to the features of a target language use task" (p.23).

In the same line of thought, Brown (2004) asserts that "When we make a claim for authenticity in a test task, we are saying that this task is likely to be enacted in the real world" (p.28). According to Brown (2004), an authentic test:

- contains language that is as natural as possible
- has items that are contextualised rather than isolated
- Includes meaningful, relevant, interesting topics
- provides some thematic organisation to items, such as through a story line or episode
- offers tasks that replicate real-world tasks

These principles will be adopted to determine whether the spoken English, paragraph writing and grammar tests are authentic or not.

5.2.1. Paragraph Writing

Authenticity is another principle which is worth revealing in the writing tests described for the purpose of this study. Writing cannot be assessed by using a conventional method like a multiple choice or true-false item test (Rukmini et al., 2016). According to Brown (2004), to ensure the authenticity of language tests, one would present natural, non-contrived language which matches real world language. In order for writing tests to be authentic, the type of writing students produced should simulate the one they encounter in the factual world at least in terms of genres and communicative purposes (e.g., writing a letter of complaint, producing a touristic brochure, etc) (Drid, 2018). Taking this into consideration, it could be said that the writing tests gathered for the purpose of the present study are inauthentic. However, tests designers are not to blame because, due to pedagogical constraints, the only way they could test a paragraph writing course is by asking their students to write a paragraph.

5.2.2. Grammar

According to Brown's (2004) criteria of authentic assessment, all the grammar tests under study are inauthentic. It is true that the language in these tests is usual, but items are isolated and decontextualized. In addition to that, and most importantly, tests items do not represent real-world tasks. Commenting on tests of this kind Purpura (2004) states:

- Since the early 1960s, language educators have associated grammar tests with discrete-point, multiple-choice tests of grammatical form. These and other 'traditional' test tasks have been criticized for lacking authenticity, for not engaging test-takers in language use and for promoting behaviours that are not readily consistent with communicative language teaching (p.264).
- Assessment of grammar should reflect the philosophy or approaches that provide the framework for a language course. However, the grammar tests collected and described in this study do not reflect the objectives stated in the course description which stresses that teaching grammar should enable students to "bridge the gap between knowing grammatical structures and using them effectively" (Course description, 2014, p.22). In addition to that, the course is built around a context-based grammar. The main advantage for students exploring grammar in context includes enabling them "to bridge the gap between language study and language use, offering them the opportunity to be exposed to grammar in its context of use, giving example of real language use and helping them to become active, confident, and autonomous learners" (ibid, 2014, p.22).
- Grammar should be dealt with at the sentence level and sub-sentence level as well as the supra-sentential or discourse levels. However, a careful examination of the tests collected in the present study shows that testing does not go in line with the instructional objectives set for the teaching of grammar for S1 students at the university level.

The grammar tests at the three universities are constructed using isolated, decontextualised and broken sentences and these are considered the least effective types of questions.

5.2.3. Spoken tests
The last principle to discuss regarding the spoken English tests designed by professors in the three universities under investigation is authenticity. "The authenticity of spoken language tests arises from their 'situational' and 'interactional' authenticity" (Bachman 1990, p.316). Clarifying these two concepts Bachman (1990) states:

- Situational authenticity refers to the relationship of features of the test method to particular features of the target-use situation. Interactional authenticity, on the other hand, mentions the extent to which an examinee's language ability is engaged in the test task. Thus, the emphasis in this model shifts from attempting to sample actual instances of non-test language use to that of determining what combination of test method facets is likely to promote an appropriate interaction of a particular group of test takers with the testing context (ibid, p.317).

In this regard, it may be suggested that a useful speaking assessment task be defined as one that is authentic since it promotes opportunities for students to interact with and in the task using the target language in ways that they might also do outside of the assessment situation which is not the case with all the English spoken assessment tasks collected and described in this study. All these spoken tests do not represent both situational and interactional authenticity because they are done in written format. Without being engaged in oral tasks during assessment, the assessor cannot judge the production and/ or interaction related to aspects like accuracy, fluency, interaction, coherence, etc. Measuring students' speaking ability in writing may not bring about the real test takers' ability. A major part of the spoken English course as mentioned in the course description is devoted to enabling students to function effectively in real-life situations through functions like opening and closing, introductions, invitations, apologising, giving and replying to compliments, requesting, making offers, etc. All in all, the spoken tests collected in this study lack one of the most important principles of assessment design-authenticity.

6. CONCLUSION
Taking into account the findings and discussion presented in the previous sections, the present study has various pedagogical implications. There are thousands of students studying in the departments of English studies in Moroccan universities, and every semester, they have to take part in the university final exams, which have a great impact on the students' academic career. According to the findings of the present study, the assessment tasks designed by professors in the departments of English studies fall prey to many pitfalls and deficiencies. These tasks are, therefore, in need of far more attention. If tests are not well prepared and invalid, they can have disastrous consequences on the students' educational process. Similarly, if the intention is to provide a large group of students with high-quality education, then test designers should pay special attention to assessment design. Considering the characteristics of the examination system in Moroccan tertiary education, where the end-of- term exams are so important, then assessment design deserves more attention. According to the findings of the present study, most test designers suffer from weaknesses regarding assessment design in so far as the techniques they use foster rote learning, memorization and guessing. Only a few tests are designed using techniques that promote critical and creative thinking. In addition to that, there is no consistency among most professors in terms of test designing for their students.

Finally, most tests lack the most important principles of assessment design. This has implications for both professors and university authorities and decision makers. Some professors are invited to consider their perception of assessment anew. It is not only an occasion to assign grades, but a fundamental key to regulate the process of teaching and learning. Testing as a form of assessment is an opportunity for them to adapt their teaching practices to the difficulties and signs of progress of their students, thus making instructions suitable to the learners' way of learning. Besides, some professors need to be more conscious of the benefits of assessment. It is through assessment that they can get insightful information on how their teaching is affecting students and if their teaching strategies are working. Test designers are required to use more alternatives in their assessment design. They, moreover, should abide by the content included in the course description in order to ensure fairness among test takers. High-quality classroom assessment is not only valid, reliable, and authentic but also fair (McMillan, 2011). Assessment is fair when all students have an equal opportunity to learn and demonstrate their knowledge and skills. Furthermore, assessment is fair when "teachers have developed appropriate learning targets, provided competent content and instruction to match those targets, and chosen assessment that reflect the target, content, and instruction" (Santrock, 2011, p.554). Unfortunately, many tests in the present study do not reflect fairness among students. Within the same module, some students have to take a long test which includes many exercises requiring the demonstration of different types of abilities while students in other groups take a very short one, usually requiring very limited types of abilities.

LITERATURE:
1. Bachman, L. F. (1990). Fundamental Considerations in Language Testing. Oxford: Oxford University Press.
2. Bachman, L. F., & Palmer, A.S. (1996). Language Testing in Practice: Designing and Developing Useful Language Tests. Oxford: Oxford University Press.
3. Black P, & Wiliam D. (1998). Assessment and Classroom Learning. Assessment in Education:
4. Principles, Policy & Practice, 5(1): 7-74. doi: 10.1080/0969595980050102
5. Boston, C. (2002). The Concept of Formative Assessment, Practical Assessment, Research, and Evaluation, 8(1), 1-6. In Bacquet, j., N. (2020). Implications of Summative and Formative Assessment in Japan – A Review of the Current Literature.
6. Brown, H. D. (1987). Principles of Language Learning and Teaching (2nd ed.). New Jersey: Prentice-Hall, Inc.
7. Brown, H. D. (2004). Language Assessment and Classroom Practices. White Plains NY: Longman.
8. Brown, H. D, & Abeywickrama, P. (2010). Language Assessment: Principles and Classrrom Practices (3rd ed.). London: Pearson.
9. Careless, D. (2010). How assessment Supports Learning: Learning oriented Assessment in Action.
10. Abington: Routledge.Caroll, J. B. (1961). Fundamental Considerations in Testing English
11. Proficiency of Foreign Students in: Testing the English Proficiency of Foreign Students.
12. Washington, DC: Center for Applied Linguistics.
13. Clark, J. L. D. (1983). Language Testing: Past and current status-directions for the future. The ModernLanguage Journal 67 :431-443.
14. Cohen, A. D. (2001). "Second Language Assessment". In Celce-Murcia (Ed.). Teaching English as a Second or Foreign Language. Boston: Heinle & Heinle.
15. Corbin, J., & Strauss, A. (2008). Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory (3rd ed.). Thousand Oaks, CA: Sage.

16. Cowan, J. (2005). Designing Assessment to Enhance Student Learning. Retrieved from http://www.heacademy.ac.uk/assets/ps/documents/practice_guides/practice_guides/ps0069designing_assessment_to_improve_physical_sciences_learning_march_2009.

17. Cumming, A. (2009). Language assessment in education: tests, curricula, and teaching. Annual Review of Applied Linguistics 29: 90–100.

18. Drid, T. (2018). The Fundamentals of Assessing EFL Writing. Magazine of Psychological and pedagogical studies. Retrieved from https://www.academia.edu/38020040/

19. Duncan, T., & Buskirk-Cohen, A. A. (2011). Exploring Learner-centered Assessment: A Cross-Disciplinary Approach. International Journal of Teaching and Learning in Higher Education. 23(2),246-259. Retrieved from http://www.isetl.org/ijtlhe/articleView.cfm?id=977

20. Elkatib, S., & Khaled, S. (2022). Summative Assessment in Higher Education: A feedback for Better Learning Outcomes. Retrieved from *17394_IACQApaper-SANAAKHALED.pdf

21. Ertmer, P. A., & Newby, T. J. (2013). Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. Performance Improvement Quarterly, 26(2), 43-71. https://doi.org/10.1002/piq.21143

22. Driscoll, A, & Wood, S. (2007). Developing Outcomes-Based Assessment for Learning-centered Education. Virginia: Stylus Publishing, LLC.

23. Elliott, N., Zivanai, S., & Herbert, Z. (2017). Primary School Teachers' views on grade7 examination preparations: A comparative analysis of urban and peri-urban primary schools in Masvingo, Zimbabwe. American Journal of Educational Research, Vol. 5, No. 8, 927-932.

24. http://pubs.sciepub.com. DOI: 10.12691/education-5-8-13.

25. Fulcher, G. (2012). Assessment Literacy for the Language Classroom. Language Assessment Quarterly, 9(2), 113–132. https://doi.org/10.1080/15434303.2011.642041.

26. Furtak, E. M. (2009). Formative Assessment for Secondary Science Teachers. Thousand Oaks, CA: Corwin Press.

27. Gronlund, N. E., & Linn, R. L. (1998). Measurement and Evaluation in Teaching. (6th ed.). New York: McMillan.

28. Gilles, J., Detroz, P., & Blais, J. (2011). An International Online Survey of the Practices and Perceptions of Higher Education Professors with Respect to the Assessment of Learning in the Classroom. Assessment & Evaluation in Higher Education. 36(6), 719-733. https://doi.org/10.1080/02602938.2010.484880.

29. Glaser, B. G. (1963). Retreading Research Materials: The Use of Secondary Analysis by the Independent Researcher. The American Behavioural Scientist, 6, 11-14.

30. Gronlund, N. E. (1998). Assessment of student achievement, (6th ed.). Boston: Allyn and Bacon.

31. Hemming, G. (2001). A guide to language Testing: Development, Evaluation, and Research. Beijing: Foreign Language Teaching and Research Press.

32. Hughes, A. (2003). Testing for Language Teachers, (2nd ed.). Cambridge: Cambridge University Press.

33. Johnson, R. K. (1989). The second language Curriculum. Cambridge: Press Syndicate of the University of Cambridge.

34. Lado, R. (1961). Language Testing: The construction and Use of Foreign Language Tests. London: Longman Group Limited.

35. McMillan, J. H. (2011). Classroom Assessment. Principles and Practice for Effective Standards-based Instruction (5th ed.). USA: Pearson Corwin Publishers.

36. McMillan, J. H. (2018). Classroom Assessment: Principles and Practice that Enhance Student Learning and Motivation (7th ed.). New York: Pearson.

37. Moussavi, S. A. (2002). Dictionary of Language Testing, (2nd ed.). Tehran: Rahnama Publication.
38. Postareff, L., Virtanen, V., Katajavuori, N., & Lindblom-Ylänne, S. (2012). Academics' Conceptions of Assessment and their Assessment Practices. Studies in Educational Evaluation. 38(3), 84-92. Retrieved from https://doi.org/10.1016/j.stueduc.2012.06.003
39. Purpura, J.E. (2004b). Assessing Grammar. Cambridge: Cambridge University Press.
40. Richards, J. C. (2015). Key Issues in Language Teaching. Cambridge: Cambridge University press.
41. Richards, J. C., & Rogers, T. (2016). Approaches and methods in language teachingNew York: Cambridge University Press.
42. Rukmini, D., & Saputri, L. (2017). The Authentic Assessment to Measure Students' English productive Skills Based on 2013 Curriculum. Indonesian Journal of Applied Linguistics. DOI: 7. 25. 10.17509/ijal. v7i2.8128.
43. Russell, M. K., & Airasian, P. W. (2012). Classroom Assessment: Concepts and Applications (Seventh edition). New York: McGraw-Hill Companies.
44. Santrock, J. W. (2011). Educational Psychology (5th ed.). New York: Mc Graw-Hill.
45. Seif, A. A. (2004). Assessment and Evaluation in Education. Tehran: Doran Publication. Retrieved from http://www.insanbilimleri.com
46. Shute, V. & Becker, B. (2010). Innovative Assessment for the 21st Century: Supporting Educational Needs. 10.1007/978-1-4419-6530-1.
47. Spolsky, B. (1978). Approaches to language testing. Arlington, VA: Center for Applied Linguistics.
48. Stiggins, R.J. (1994). Student-centred Classroom Assessment. New York: Merrill.
49. The teaching staff in the department of English studies, (2014). Course Description. Meknes, Morocco: Moulay Ismail University.
50. Van der Merwe, R. (2011). Formative Assessment in Senior Phase Mathematics. Unpublished PhD thesis, University of Free State, Bloemfontein.
51. Williams P, 2014. Squaring the Circle: A New Alternative to Alternative Assessment. Teaching in Higher Education, 19(5): 565-577. doi: 10.1080/13562517.2014.882894
52. Yüksel, H. S. & Gündüz, N. (2017). Formative and Summative Assessment in Higher Education: Opinions and Practices of Instructors. European Journal of Education Studies, 3(8), 339. https://doi.org/10.5281/zenodo.832999

ECONOMIC VS. POLITICAL POWER; HISTORICAL OVERVIEW OF THE WORLD POWER INDEX

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ABSTRACT

Economists have traditionally been elusive to the concept of political power, as they typically treat political power as an area reserved just for political scientists. Some academics go that far stating that political power is the power to expropriate, while economic power is the power to create. Some academics treat both powers as equal, whereas some instigate that political power often has economic origin. On the other hand, shocks in political power do affect the long-term economic perspective of one country. Thus, it is not easy to grasp the severity of the nexus between economic and political power. The technical problem of measuring and identifying variables released of the interdependence of economic and political background is immanent. The World power index represents a quantitative technique that tries to over distinct hermeneutics problems of subjective interpretation of power on an international level, thus contributing to a more accurate comparison of national power. The goal of this paper is to examine the common social construct of power by evaluating the relevance of the World power index within the economic and political interdependence for the period 1975-2017. The outcome of the research indicates that the World power index could be seen as an important assessment tool for measuring and monitoring complex multidimensional phenomena of power with all its political, economic and social weights, but should not be assimilated to just one type of power.
Keywords: economic power, political power, World power index, GDP, panel cointegration

1. INTRODUCTION

In the next few years, the world will face serious political, social and economic challenges while trying to recover from the COVID-19 pandemic and yet not perceivable repercussions of the war in Ukraine. Political instability which is currently causing tangible economic suffering has also heightened geopolitical tensions by creating threats to global trade, energy and food security (Technology and Innovation Report, 2023). Considering how damaging can political uncertainty be in creating financial volatility, higher inflation, frequent changes in policies, regressing economic diplomacy achievements, decreasing investments and finally macroeconomic uncertainty, economists need not to focus solely on economic phenomena, but they also need to be able to recognize the importance of political power in shaping socio-economic outcomes. Economists have often been elusive to the concept of political power, treating it as an area reserved exclusively for political scientists. Some academics go that far stating that political power is the power to expropriate, while economic power is the power to create. Some academics treat both powers as equal, whereas some instigate that political power often has economic origin.

On the other hand, shocks in political power do affect the long-term economic perspective of one country. How economic and political powers are distributed and maintained within and across societies is what lies at the core of social relations on the global scale. It is not easy to grasp the severity of the nexus between economic and political power because repeating the historical patterns of polarized development additionally threatens to further widen inequality between developed countries and those on the margins of economic growth, hence rising poverty and inequality may further heighten tensions within and between countries. The technical problem of measuring and identifying variables released of the interdependence of economic and political background is immanent. Whalley (2009) discussed alternative meanings of shifting economic power while emphasizing that little work has been done by economists on explaining the concept of power and metrics which can be used to capture the size of power shifts. How to conceptualize and add quantitative dimension to the concept of power becomes a challenging task. For that purpose, this paper introduces an alternative insight into economic vs. political power issues by analyzing the pragmatic reach of the so-called World power index. The World power index represents a quantitative technique that tries to over distinct hermeneutics problems of subjective interpretation of power on an international level, thus contributing to a more accurate comparison of national power. The goal of this study is to examine the common social construct of power by evaluating the relevance of the World power index within the economic and political interdependence for the period 1975-2017. The outcome of the research suggests that the World power index could be seen as an assessment tool for perpetuating the legitimacy of power with all its political, economic and social weights, but should not be assimilated to just one type of power.

2. THEORETICAL BACKGROUND

This section presents a historical overview of the nexus between economic and political power in regard to mutual causality, and in addition offers a short insight into related theoretical and empirical issues.

2.1. Economic vs. political power; theory and empirics

Power can be interpreted as the ability to cause or prevent an action or to make things happen, together with the discretion to act or not to act. There are many different acts/types of power (political, delegated, ascribed, financial, traditional, economically related and etc.), different spaces where power is acted out (closed, invited, created), occur on different level (for example individual vs. national), with different transparency or visibility such as visible (institutionalised by formal laws and procedures or decision-making mechanisms or formal diplomacy acting), hidden (political agendas without legitimacy) and invisible (norms and beliefs, ideologies) (Oxfam, 2014). Economic and political powers are two distinct but overlapping types of power that are often used to measure the relative power of countries or individual entities over time. While political power can be evaluated on the merit of democracy scope, government stability, political structures, military strength and diplomatic influence, economic power rests on comparing the national output, economic growth, unemployment rates, foreign investment perspectives and international trade impacts on a global level. Rand et al. (1986) defined economic power as the power to create and trade values and political power as the power to expropriate and destroy them, hence the distinction between them as the difference between punishment and reward, theft and trade, plunder and production, destruction and creation. Though one might treat these powers at some points in time as equal (in war times for example), or one might state that political power lies merely on economic origins or *vice versa*, there is no doubt that both dimensions are forms of social power that are closely interconnected.

Economic and political powers intervene in different areas. Economic experts must evaluate how political stances and institutions, agents influencing the decision-making process, perceptions on redistribution possibilities, views on tax systems and similar legal action shape economic outcomes on a country level and/or international scale. Likewise, political experts know that their power to politically act (for example, pursue of the progressive taxation solutions and social welfare programmes) is related to the economic strength within its social surroundings. We are all aware that the political impact of/on economic reforms can change the distribution of income and rents in a society, benefiting some more than the others. Next, there are areas of economics that are directly related to political background such as political economy, institutional economics, health and education economics and public choice theory. For that purpose, economists have developed various approaches, tools, models and indicators to cope with the ever-changing nature of political positions within a dynamic, constantly fluctuating and volatile economic environment. Further, diplomatic endeavours repose on the backbone of political and economic powers for it rests on the legitimacy of persuasion and/or compulsion. The balance of these two powers within diplomacy can have a substantial effect on the global situation producing the potent times of stability and prosperity or impotent times of conflict and instability. The world's dominant countries such as the USA, China, Russia, several EU countries and Japan (according to many statistics as well as to World power index) are the ones that consistently dominate global affairs, display significant military power and emerge as the major economic player hence they influence international community on both economic and political level. Interesting papers that gave different perspectives on the topic of the interrelationship between economic and political power or influence did not offer a new insight into the way of measuring these powers, however they provided insight into their correlation and causality within distinct interpretation directions. For example, Acemoglu and Robinson (2013) outlined a simple framework for the study of the impact of current economic policies on the future political equilibria and indirectly on future economic outcomes. Their main conclusion implied that sound economic policy must follow a detailed analysis of political economy and should factor in its impact on future political equilibria. Sen (2014) proposed a framework for understanding political channels of within-country growth, arguing that the theoretical and empirical literature does not offer an adequate conceptualization of the political dynamics of economic growth. Aisen and Veiga (2013) tried to evaluate the effects of political instability on economic growth by using dynamic panel data models for 169 countries for the period 1960-2004. They concluded that for most of the countries, lower growth rates of GDP per capita (as well as lower rates of productivity growth and smaller degree in physical and human capital accumulation; in marginal way, even democracy showed small negative effect) was related to higher degrees of political instability, while economic freedom and ethnic homogeneity were beneficial to growth perspective. Whalley (2009) discussed the interpretation and manifestation of shifting global economic power away from the OECD and towards the non-OECD countries, suggesting that notions of power are emphasized on the market size and retaliation leverage, bargaining power in cooperative arrangements between countries as the power arises from legitimacy or intellectual power. We found no relevant sources dealing with the interpretation of the World power index apart from its author, hence it calls for a detailed illustration of this indicator

2.2. World power index

Designing tools to reinforce rankings with respect to economic status and political situation often bears a significant level of subjectivity, regardless if qualitative or quantitative data have been used for its construction. From a theoretical point of view, the dilemma of internationally realized power is still in controversy and debate at the academic and pragmatic levels. The theoretical problem lies primarily in its definition, the identification of the related constitutive

dimensions, the capabilities considered in each of them, and the consequent types of power. World power index is an indicator that does not solve or offer the answer for theoretical discussions, however it proffers a way to identify and measure relevant variables depicting different position – state – status of power, thus offering an answer for technical dilemmas related to the shape of national power on an international level. The World power index is defined as the numeric construct of the accumulation of national capacities that a country possesses to exercise its power on a global scene, therefore it is a tool that allows you to describe, compare and confront your hypothesis about the power of nations. It helps in recognizing the most powerful countries (world powers), identifying the middle powers and the semi-core countries, understanding the potentialities of regional powers and observing the subregional powers (Morales Ruvalcaba, 2022). It becomes very useful for it can help in effectively ranking countries and regions, providing information to policymakers, academic society, media and the public since the results are easily understood. Additionally, since it is being constructed with the aim of measuring and monitoring complex and multidimensional phenomena of international-national power it indirectly becomes an assessment tool for many other social dimensions besides economic and political power, such as sustainability, social development, welfare, diplomacy, and etc. The World power index is computed out of three components or sub-indexes (Morales Ruvalcaba, 2022): the Material Capacities Index (MCI) as a composite index that seeks to reflect more broadly the economic-military power of states from considering six essential variables: national production, total surface area, defense, international commerce, finances and research & development; the Semimaterial Capacities Index (SCI) as a composite index that seeks to refer the socio-institutional power of a State from considering six fundamental variables: production per capita, population, consumption: Household final consumption expenditure per capita, energy, education and health: Health; and the Immaterial Capacities Index (ICI) made from six variables in order to reflect more broadly cultural-communicative power of a State from: government expenditure, tourism appeal, international aid, telephone lines, academic influence and cosmopolitanism. The number of variables used in constructing the World power index suggest that we are dealing with a composite indicator that seeks to address large datasets, many obscure details, numerous latent and manifest variables, aggregation problems, possibly correlated variables, calculation with possibly duplicating weights and similar issues, into a single summary indicator. Construction of such an index was never to be perceived as an easy task, therefore whoever needs to use this indicator should be aware of its limitations and should treat the results with caution since it could bear consequences on the final conclusions.

3. METHODOLOGY AND DATA

In this section we will display the standards panel model based on the relationship between two variables, describe the data and applied methodology. Since economic progress can be covered by several statistical indices, we will offer some additional results on alternative economic indicators assuring in that way the robustness of the initial analysis.

3.1. The model

In order to investigate the linkage between economic and political power (for the data that have both cross-sectional and time series dimensions), with respect to causality going from political power towards economic power, we explored the long-run impact of World power index on the economic perspective, represented through the variable GDP per capita in a general form of bivariate model expressed as an equation:

$$lnGDP\_pc_{it} = \alpha_{0i} + \beta_{1i}lnWPI_{it} + u_{it} \qquad\qquad (1)$$

where $lnGDP\_pc_{it}$ represents the logarithm of GDP per capita at time t, $lnWPI_{it}$ stands for World power index at time t and u_{it} is the error term while i and t denotes country and time respectively. Supplementary, we interchanged the variables GDP per capita, standard GDP measure and GDP growth to additionally verify the initial relationship.

3.2. Data

Annual panel data on the selected variables, covering the period 1975-2017 for 10 economically developed and/or politically influential and powerful countries (United States, Germany, France, South Korea, United Kingdom, Italy, Russia, Japan, Australia and China) are taken from the World Bank database: World Development Indicators and the World Power Index Database (Morales Ruvalcaba, 2022). Namely, data for *GDP variable* are presented in constant 2015 prices, expressed in U.S. dollars, as dollar figures for GDP are converted from domestic currencies using 2015 official exchange rates. Next, annual percentage growth rate of GDP (*GDP_growth variable*) at market prices are based on constant local currency, i.e. on constant 2015 prices, expressed in U.S. dollars. The *variable GDP_pc*, i.e. GDP per capita (gross domestic product divided by midyear population) is expressed in constant 2015 U.S. dollars. The World power index (*WPI variable*) is a composite indicator defined as the numeric expression which calculates the accumulation of national capacities that a country has to exercise its power in the international system. All variables are expressed in their logarithmic form. Other (substitute) variables representing the political power variables such as passport index (PI), global fire power (GFP), number of diplomatic missions (DM), digital diplomacy index (DDI), diplomatic weight (DW), diplomatic network reach (DNR), population (POP), gross domestic product (GDP) in current prices and global diplomacy (GD) rankings are collected from several sources; Global Passport Power Rank (2022), Global Firepower Annual Ranking (2023), Global Diplomacy Index (2019) and Digital Diplomacy Index (2023). In order to reveal a possible empirical bond between the selected variables representing diplomatic and political power in comparison to the standard measure of economic growth, correlation coefficients were extracted. A minor shortcoming of this correlation analysis is that it comprises indices from different years ranging from 2017-2023, due to data unavailability for all countries within the same year. Nevertheless, the rankings and data for selected countries have not changed significantly over this short period of time. Correlation matrix (*Table 1*) depicts a weak to medium, mostly positive, correlation between the GDP measure and other variables, however it also displays a strong positive correlation coefficient of 0.89 between GDP measure and World power index, suggesting a possible causal relationship between variables representing economic and political power. This gave us a reason to focus just on the variable World power index within our empirical modelling.

Corr.	PI	GFP	DM	DDI	DW	DNR	POP	GDP	GDR	WPI
PI	1.00									
GFP	0.53	1.00								
DM	-0.41	-0.83	1.00							
DDI	0.11	-0.20	0.39	1.00						
DW	-0.15	-0.22	0.34	0.88	1.00					
DNR	0.52	-0.34	0.38	0.64	0.36	1.00				
POP	-0.86	-0.50	0.50	-0.08	0.20	-0.39	1.00			
GDP	-0.35	-0.59	0.57	0.40	0.53	0.31	0.66	1.00		
GDR	-0.34	-0.80	0.98	0.38	0.35	0.42	0.44	0.53	1.00	
WPI	0.01	-0.38	0.56	0.57	0.61	0.52	0.38	**0.89**	0.56	1.00

Table 1: Correlation matrix
(Source: Authors' calculation)

3.3. Methodology

The presence of cointegration may be interpreted as the presence of a long-run equilibrium relationship between the variables in question. In recent years, it has become very pragmatic to use panel data with large both, cross-sectional and time dimensions, responding to the complex nature of interactions and dependencies that exist over time and across the individual units in the panel (Breitung and Pesaran, 2005). So-called cointegration analysis with panel data is similar to cointegration, hence is typically employed in time series analysis and consists of unit root tests, cointegration tests and the estimation of long-run (and short-run) relationships. Many authors have generally confirmed that it is the span of the data, rather than frequency that matters for the power of this approach (Pedroni, 2000). On the other hand, the pooling of time series is traditionally related to the substantial degree of sacrifice in the terms of possible heterogeneity of individual time series, therefore, testing the unit root and cointegration hypothesis by using panel data involves several serious complications such as mentioned unobserved heterogeneity, the question of independence of cross-section units, panel results are often difficult to interpret, and etc. Even though panel results may be biased by specific county experience, time averages, unbalanced features, etc., the problem of shorter time series leads us to the panel cointegration approach (Škare, Tomić and Kristek, 2020). The cointegration analysis begins with panel unit root tests, as it is very important to determine the order of integration of a time series in order to avoid spurious outcomes and conclusions, mostly because economic variables are generally labelled by non-stationarity. If the series are integrated i.e. non-stationary in their levels, the analysis may continue with testing for the panel cointegration. In the opposite case, a short-run interpretation will be appropriate. To test the order of integration, we employed several panel unit root tests: LLC test (Levin, Lin and Chu, 2002), Breitung test (Breitung, 2000), IPS test (Im, Pesaran and Shin, 2003) and Fisher-type tests using the ADF (Choi, 2001). In the final step of the analysis, we utilized panel cointegration tests according to Pedroni (1999, 2004), Maddala and Wu (1999) and Kao (1999) tests. Pedroni and Kao extend the two-step Engle-Granger (1987) framework to tests involving panel data. Pedroni proposes several tests for cointegration that allow for heterogeneous intercepts and trend coefficients across cross-sections with two alternative hypotheses: the homogeneous vs. heterogeneous alternative. The Kao test follows the same approach as the Pedroni tests, but specifies cross-section specific intercepts and homogeneous coefficients on the first-stage regressors. Maddala and Wu (1999) imposed Fisher's combined test (Fisher, 1932) that is based on the results of the individual independent tests and Johansen's test methodology (Johansen, 1991, 1995) to propose an alternative approach by combining tests from individual cross-sections in order to obtain test statistics for the full panel. The long-run relationship is estimated using the pooled Panel Fully Modified Least Squares (FMOLS), pooled Panel Dynamic Least Squares (DOLS) and Pooled Mean Group/AR Distributed Lag (PMG/ARDL) estimation methods (see Škare, Benazić and Tomić, 2016). Since FMOLS and DOLS provide only long-run estimates, for the short-run estimation PMG/ARDL is used. All these methods assume the existence of a single cointegrating vector between panel data, which is relevant for our analysis. FMOLS and DOLS estimation methods for panel dataset allow the estimation of the panel cointegrating regression equation for non-stationary data by correcting the standard pooled OLS for serial correlation and endogeneity of regressors that are normally present in long-run relationships. Furthermore, the DOLS allows augmenting the panel cointegrating regression equation with cross-section specific lags and leads to eliminate the endogenity and serial correlation. The PMG/ARDL (Pesaran, Shin and Smith, 1999) takes the cointegration form of the simple ARDL model and adapts it for a panel setting by allowing the intercepts, short-run coefficients and cointegrating terms to differ across cross-sections. It has leverage over the FMOLS and DOLS in a way it allows the short-run dynamic analysis to differ across cross-sections while the long-run coefficients are constrained to be invariant.

4. THE RESULTS

In this section we will display the results of the empirical model demonstrated within the *equation* (*1*). To test the robustness of the relationship from the basic model, we introduced two more variables, namely a standard GDP measure and GDP growth, to replace GDP per capita variable, as to provide an additional confirmation of the established nexus. Graphical display of the variables could be found in the Appendix. Regarding the order of integration of our time series, unit root tests (*Table 2*) indicated that the variables are integrated, i.e. they are non-stationary in level and stationary in first differences (probabilities for all variables were 0.00). Hence, a panel cointegration tests can be applied. Next, we present the results of panel cointegration tests between the GDPpc and World power index variable (*Table 3*). In the case of the test with only intercept, most of the Pedroni's statistics do not reject the null hypothesis of no cointegration between variables, however when intercept and trend are included, almost all the Pedroni's statistics reject the null hypothesis of no cointegration between variables (probabilities ranging from 0.00 to 0.05) indicating the existence of long-run panel cointegration relationship between the observed variables. This is further confirmed by the Johansen Fisher trace and maximum eigenvalue cointegration tests that reject the null hypothesis of no cointegration between variables, but only for the test which includes linear deterministic trend (probability of 0.01 for the existence of one cointegration equation). Kao's panel cointegration test, on the other hand, does not reject the null hypothesis of no cointegration between variables (probability of 0.40) suggesting the absence of long-run panel cointegration relationship between the observed variables. The results drive us to the conclusion that estimation of a long-run relationship between the GDPpc and World power index could be viable.

Variable and test	Level		First difference	
	Intercept	Intercept and trend	Intercept	Intercept and trend
Levin, Lin and Chu t*	*Prob.***			
lnWPI	0.20	0.02	0.00	0.00
lnGDP_growth	0.00	0.00	0.00	0.00
lnGDP	0.00	0.56	0.00	0.00
lnGDP_pc	0.02	0.55	0.00	0.00
Breitung t-stat	*Prob.***			
lnWPI	-	0.80	-	0.00
lnGDP_growth	-	0.00	-	0.00
lnGDP	-	0.99	-	0.00
lnGDP_pc	-	0.98	-	0.00
Im, Pesaran and Shin W-stat	*Prob.***			
lnWPI	0.14	0.48	0.00	0.00
lnGDP_growth	0.00	0.00	0.00	0.00
lnGDP	0.20	0.98	0.00	0.00
lnGDP_pc	0.29	0.98	0.00	0.00
ADF – Choi Z-stat	*Prob.****			
lnWPI	0.11	0.45	0.00	0.00
lnGDP_growth	0.00	0.00	0.00	0.00
lnGDP	0.22	0.98	0.00	0.00
lnGDP_pc	0.31	0.99	0.00	0.00

Table 2: Panel unit root tests
(Source: Authors' calculations)

Variables: lnGDP_pc, lnWPI								
Pedroni residual cointegration test	Intercept				Intercept and trend			
	Statistic	Prob.	Weighted Statistic	Prob.	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	0.2799	0.3898	-2.3666	0.9910	2.9952	0.0014	14.329	0.0000
Panel rho-Statistic	0.2855	0.6124	1.8101	0.9649	-2.5499	0.0054	-0.3426	0.3659
Panel PP-Statistic	0.3248	0.6274	0.7998	0.7881	-2.8701	0.0021	-0.9837	0.1626
Panel ADF-Statistic	0.4837	0.6857	1.9224	0.9727	-2.4898	0.0064	-1.6370	0.0508
Group rho-Statistic	2.8996	0.9981			0.7400	0.7704		
Group PP-Statistic	1.6314	0.9486			-0.2942	0.3843		
Group ADF-Statistic	2.8039	0.9975			-1.6436	0.0501		
Johansen Fisher cointegration test	No deterministic trend (restricted constant)				Linear deterministic trend (unrestricted constant)			
Hypothesized No. of CE(s)								
None	34.03	0.0259	32.98	0.0339	33.27	0.0315	25.36	0.1880
At most 1	14.83	0.7862	14.83	0.7862	38.85	0.0070	38.85	0.0070
Kao residual cointegration test	t-Statistic				Prob.			
ADF	-0.2581				0.3981			

Table 3: Cointegration test: lnGDP_pc vs. lnWPI
(Source: Authors' calculations)

The following *Table 4* presents the panel cointegration results from FMOLS, DOLS and PMG/ARDL estimations, providing the long-run cointegration coefficients rendered in equation (*1*). PMG/ARDL estimations for the short-run dynamics are available upon request.

Table following on the next page

	Panel Fully Modified Least Squares (FMOLS) – (lags-leads; 0,0) – Pooled estimation							
Variable	Constant and trend				Linear trend			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
lnWPI	-0.8302	2.5122	-0.3304	0.7412	-12.555	2.1303	-5.8935	0.0000
	Panel Dynamic Least Squares (DOLS) – (lags-leads; 0,0); Pooled estimation							
Variable	Constant				Linear trend			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
lnWPI	-5.5363	3.0128	-1.8375	0.0670	-14.403	2.4225	-5.9455	0.0000
	PMG/ARDL (Pooled Mean Group/AR Distributed Lag) – ARDL (1,1)							
Variable	No constant no trend				Constant and trend			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
	Long Run Equation							
lnWPI	-31.3357	3.7513	-8.3531	0.0000	-28.2067	9.8678	-2.8584	0.0045
	Short Run Equation							
COINTEQ01	-0.0084	0.0104	-0.8136	0.4163	-0.0364	0.0331	-1.1000	0.2720
D(lnWPI)	1.5456	0.7330	2.1085	0.0356	0.9176	0.4932	1.8603	0.0636
C					-0.1483	0.1860	-0.7976	0.4256
@TREND					0.0062	0.0065	0.9541	0.3406

Table 4: Panel cointegration results; lnGDP_pc (dependent variable)
(Source: Authors' calculations)

Results of all estimation methods indicated that long-run coefficients of the World power index (in regard to GDPpc) are statistically significant, but unexpectedly with negative signs. The coefficient was negative and insignificant (-0.83) in the case with constant and trend, and negative and strongly significant (-12.55) in the case with linear trend for FMOLS. We found negative and significant coefficients (-5.54 and -14.40) in the case with constant and in the case with linear trend for DOLS. Coefficients obtained from the PMG/ARDL with no constant and no trend (-31.34) and with constant and trend (-28.21) were also negative and statistically significant. Zero restrictions on the long-run parameters are tested using the Wald test (available upon request), confirming their statistical significance.

Dependent variable	Panel Fully Modified Least Squares (FMOLS) – (lags-leads; 0,0) – Pooled estimation							
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
lnGDP_growth	-10.8931	0.4735	-23.0039	0.0000	-0.3301	0.3026	-1.0909	0.2759
lnGDP	-15.6544	6.9005	-2.2685	0.0238	-15.4293	6.8783	-2.2431	0.0254
lnGDP_pc	-0.8302	2.5122	-0.3304	0.7412	-12.555	2.1303	-5.8935	0.0000
Dependent variable	Panel Dynamic Least Squares (DOLS) – (lags-leads; 0,0); Pooled estimation							
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
lnGDP_growth	-11.5162	0.5515	-20.881	0.0000	-0.3653	0.3860	-0.9465	0.3445
lnGDP	-27.7221	8.3460	-3.3215	0.0010	-48.6205	7.2826	-6.6762	0.0000
lnGDP_pc	-5.5363	3.0128	-1.8375	0.0670	-14.403	2.4225	-5.9455	0.0000
Dependent variable	PMG/ARDL (Pooled Mean Group/AR Distributed Lag) – ARDL (1,1); long-run equations							
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
lnGDP_growth	-10.8444	0.2094	-51.773	0.0000	-0.3031	0.1772	-1.7100	0.0880
lnGDP	-163.9191	57.5843	-2.8465	0.0046	-94.4138	30.5410	-3.0913	0.0021
lnGDP_pc	-31.3357	3.7513	-8.3531	0.0000	-28.2067	9.8678	-2.8584	0.0045

Table 5: lnWPI vs. economic variables – comparative analysis of long-run coefficients
Notes: Three economic variables are separately evaluated as dependant variables through three distinct models with lnWPI being independent variable. Cointegration tests and complete model results are available upon request.
(Source: Authors' calculations)

Comparative analysis of long-run coefficients from three different models (*Table 5*) between World power index and three different variables representing economic progress, suggested similar results when variable GDPpc was interchanged with either GDP or GDP growth variables. Most of the panel estimation methods across different cases provided analogous results, suggesting the existence of negative, but highly statistically significant influence of the World power index variable on the economic prosperity of developed and politically influential countries. Again, zero restrictions on the long-run parameters are tested using the Wald test (available upon request), confirming their statistical significance. Short-run evidence from the PMG/ARDL models (for all three variables of economic prosperity) was consistent with the long-run relationship for all three independent models. When scrutinizing on the individual short-run cross section results obtained from the PMG/ARDL model estimation (results available upon request), again we found relatively consistent results regarding the signs of the coefficients, however, in most of the countries error correction coefficients were statistically significant suggesting a slow to moderate speed of convergence.

5. IMPLICATION OF THE RESULTS AND CONCLUDING REMARKS

National power, that the World power index seeks to reflect, is in reality a mixture of political, social, economic, cultural, religious and many other dimensions. The World power index is a composite indicator, and this kind of measures typically seek to reduce distinct quantitative indices and qualitative features into a single summary indicator that can suffer from many conceptual (construction of reliable indicator) and statistical flaws (normalization of variables, aggregation, associating weights). That said, the World power index is trying to provide a single measure for not a directly observable multidimensional phenomenon where the latent variable is power, a social construct that cannot be seized through a few manifest variables. In that way, this index becomes a very useful tool in assessing influence of countries on an international level, in ranking countries by their influence, in providing information to policymakers, international institutions, businesses, the media and finally public on how that power is distributed around the globe. Ultimately, it reflects the political power that one country exacerbates, alleviates or mitigates over other countries. Far from the fact that the World power index is not a perfect statistical tool and without any doubts, it is not a perfect approximation of political power, hence it is the only available dataset that covers relevant political, economic and social dimensions that transcend the political influence on a cross-country scale. The results of our analysis provide rather unexpected results, suggesting that the World power index ranking or power of one country on an international level negatively influences its economic perspective analysed by common economic variables GDP, GDPpc and GDP growth within the period 1975-2017 for ten observed countries. Such conclusion can be explained in a way that power concentrated in the hands of a few can increase inequality, weaken institutions, distort market freedom, elude fiscal redistribution and eventually harm productivity growth. There has been little empirical research that could unambiguously explain economic implications of political influence, therefore our study stands besides those researches that found negative relationship between political influence and market concentration (for example Salamon and Siegfried, 1977) and with those that found that higher degree of political instability is associated with lower growth of GDP (for example Aisen and Veiga, 2013). Nonetheless, our results do not provide solid ground for a conclusion that political power negatively influences economic power, mainly because the World power index is an imperfect approximation of political power, and is a rather broader indicator of influence that a country can have on aggregate (by many other dimensions) within an international perspective. Next, World power index is consisted of many sub-indicators representing dimensions that are heterogeneously distributed among selected countries, for example, United States of America health and military expenditures per person far exceed all other countries, Russia apart from energy supply does not achieve

excellence in economic performance, most of European countries and Japan are showing rapid ageing, South Korea is experiencing demographic fallout having the world's lowest fertility rate and lower economic growth rates, Australia has limited defence spending, China achieving unprecedented economic growth and development, and etc. Though, the economic and political relevance of these ten countries is undeniable and their international impact is unparalleled, the dynamics of their World power index, as it is evident in the graphs (see Appendix), is rather divergent, experiencing phases of growth/decline in different points of time, while their economic performance on the other hand, is consisted mostly of an upward trend. In addition, the initial correlation analysis suggested a very strong positive relationship between GDP in current prices and World power indicator, meaning that there might be some kind of nexus in the dynamics of these two measures, but it might not need to be exactly positive or negative, as well as causal, in different eras. Further inquiry based on nonlinear behaviour and switching regimes would certainly clarify this issue. To conclude, the World power index is not designed to be the ultimate tool to reinforce rankings of countries in respect to political or any distinct power, but to be an assessment tool for measuring and monitoring complex multidimensional phenomena of power with all its political, economic and social weights. The misuse of this indicator can have a direct impact on the robustness of final outcomes if it is left to be interpreted only as a political variable, as our research indirectly indicated. Thus, we should interpret the World power index exactly as it proclaimed by its author: '... the WPI contributes to the accurate comparison of national power and the study of international structure ... because it measures the power of nations and unveils the rise and fall of States...' (Morales Ruvalcaba, 2022). We hope that we manage to offer a modest contribution to the comprehension of the practical and methodological grasp of this relatively novel measurement. Our approach and deductions made above are just our opinion and could/should be subject to revision in the future.

LITERATURE:
1. Acemoglu, D. and Robinson, J.A. (2013) Economic versus Politics: Pitfalls of Policy Advice, *Journal of Economic Perspectives*, Vol. 27, No. 2, pp. 173-192.
2. Aisen, A. and Veiga, F. J. (2013) How does political instability affect economic growth. *European Journal of Political Economy*, Vol. 29, pp. 151-167.
3. Breitung, J. (2000) The Local Power of Some Unit Root Tests for Panel Data. In B. Baltagi (ed.), *Advances in Econometrics, Vol. 15: Nonstationary Panels, Panel Cointegration, and Dynamic Panels*, Elsevier Science Inc., pp. 161–178.
4. Breitung, J. and Pesaran, H. M. (2005) Unit Roots and Cointegration in Panels. *CESIFO Working Paper No.* 1565, CESifo Group Munich.
5. Choi, I. (2001) Unit Root Tests for Panel Data. *Journal of International Money and Finance*, Vol. 20, No. 2, pp. 249–272.
6. Digital Diplomacy Index (2023) Digital Diplomacy Index 2022-2023. Available at: https://digital-diplomacy-index.com/index/.
7. Engle, R. F. and Granger, C. W. J. (1987) Co-integration and Error Correction: Representation, Estimation, and Testing, *Econometrica*, Vol. 55, No. 2, pp. 251–276.
8. Fisher, R. A. (1932) *Statistical Methods for Research Workers*, 4th Edition. Oliver & Boyd: Edinburgh.
9. Global Diplomacy Index (2019) Lowy Institute Global Diplomacy Index 2019 Country Ranking. Available at: https://globaldiplomacyindex.lowyinstitute.org/country_rank.html.
10. Global Firepower Annual Rankings (2023) Military strength ranking 2023. Available at: https://www.globalfirepower.com/countries-listing.php.
11. Im, K. S., Pesaran, M. H. and Shin, Y. (2003) Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, Vol. 115, No. 1, pp. 53–74.

12. Johansen, S. (1991) Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models, *Econometrica*, Vol. 59, No. 6, pp. 1551–1580.
13. Johansen, S. (1995) *Likelihood-based Inference in Cointegrated Vector Autoregressive Models*. Oxford: Oxford University Press.
14. Kao, C. (1999) Spurious Regression and Residual-Based Tests for Cointegration in Panel Data. *Journal of Econometrics*, Vol. 90, No. 1, pp. 1–44.
15. Levin, A., Lin, C. and Chu, C. (2002) Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, Vol. 108, No. 1, pp. 1–24.
16. Maddala, G. S. and Wu, S. (1999) A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test. *Oxford Bulletin of Economics and Statistics*, Vol. 61, No. S1, pp. 631-652.
17. Morales Ruvalcaba, D. (2022) World Power Index Database. Available at: https://www.worldpowerindex.com/data-wpi/.
18. Oxfam (2014) *How politics and economics intersect: A simple guide to conducting political economy and context analysis*. Oxford Policy Management. Available at: https://policy-practice.oxfam.org/resources/how-politics-and-economics-intersect-a-simple-guide-to-con ducting-political-eco-312056/.
19. Passport Index (2022) Global Passport Power Rank 2022. Available at: https://www.passportindex.org/passport-power-rank-2022.php.
20. Pedroni, P. (1999) Critical Values for Cointegration Tests in Heterogeneous Panels with Multiple Regressors. *Oxford Bulletin of Economics and Statistics*, Vol. 61, Special Issue, pp. 653–70.
21. Pedroni, P. (2000) Fully Modified OLS for Heterogeneous Cointegrated Panels In B. Baltagi (ed.), *Advances in Econometrics, Vol. 15: Nonstationary Panels, Panel Cointegration, and Dynamic Panels*, Elsevier Science Inc., pp. 93–130.
22. Pedroni, P. (2001) Purchasing Power Parity Tests in Cointegrated Panels. *The Review of Economics and Statistics*, Vol. 83, No. 4, pp. 727–731.
23. Pedroni, P. (2004) Panel Cointegration; Asymptotic and Finite Sample Properties of Pooled Time Series Tests with an Application to the PPP Hypothesis. *Econometric Theory*, Vol. 20, No. 3, pp. 597–625.
24. Pesaran, M. H., Shin, Y. and Smith, R. P. (1999) Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of the American Statistical Association*, Vol. 94, No. 446, pp. 621-634.
25. Rand, A., Branden, N. Greenspan, A. and Hessen, A. (1986) *Capitalism: The Unknown Ideal Mass*. Penguin Publishing Group.
26. Salamon, L.M. and Siegfried, J.J. (1977) Economic Power and Political Influence: The Impact of Industry Structure on Public Policy. *America Political Science Review*, Vol. 71, No. 3, pp. 1026-1043.
27. Sen, K. (2014) The Political Determinants of Economic Growth: An Analytical Review, in Hickey, S., Sen, K. and Bukenya, B. (ed.) *The Politics of Inclusive Development: Interrogating the Evidence*, Oxford University Press.
28. Škare, M., Benazić, M. and Tomić, D. (2016) On the neutrality of money in CEE (EU member) states: A panel cointegration analysis. *Acta Oeconomica*, Vol. 66, No. 3, pp. 393-418.
29. Škare, M., Tomić, D. and Kristek, I. (2020) Terms of trade impact on international trade: A panel cointegration analysis. *Transformations in business & economics*, Vol. 19, No. 3, pp. 136-158.
30. UNCTAD (2023) *Technology and Innovation Report, 2023; Opening green windows*. United Nations Conference on Trade Development.

31. Whalley, J. (2009) Shifting Economic Power. *OECD Development Centre*. Available at: https://www.oecd.org/dev/pgd/45337859.pdf.
32. World Bank (2023). Available at https://data.worldbank.org/.

APPENDIX

lnGDP_growth

lnGDP
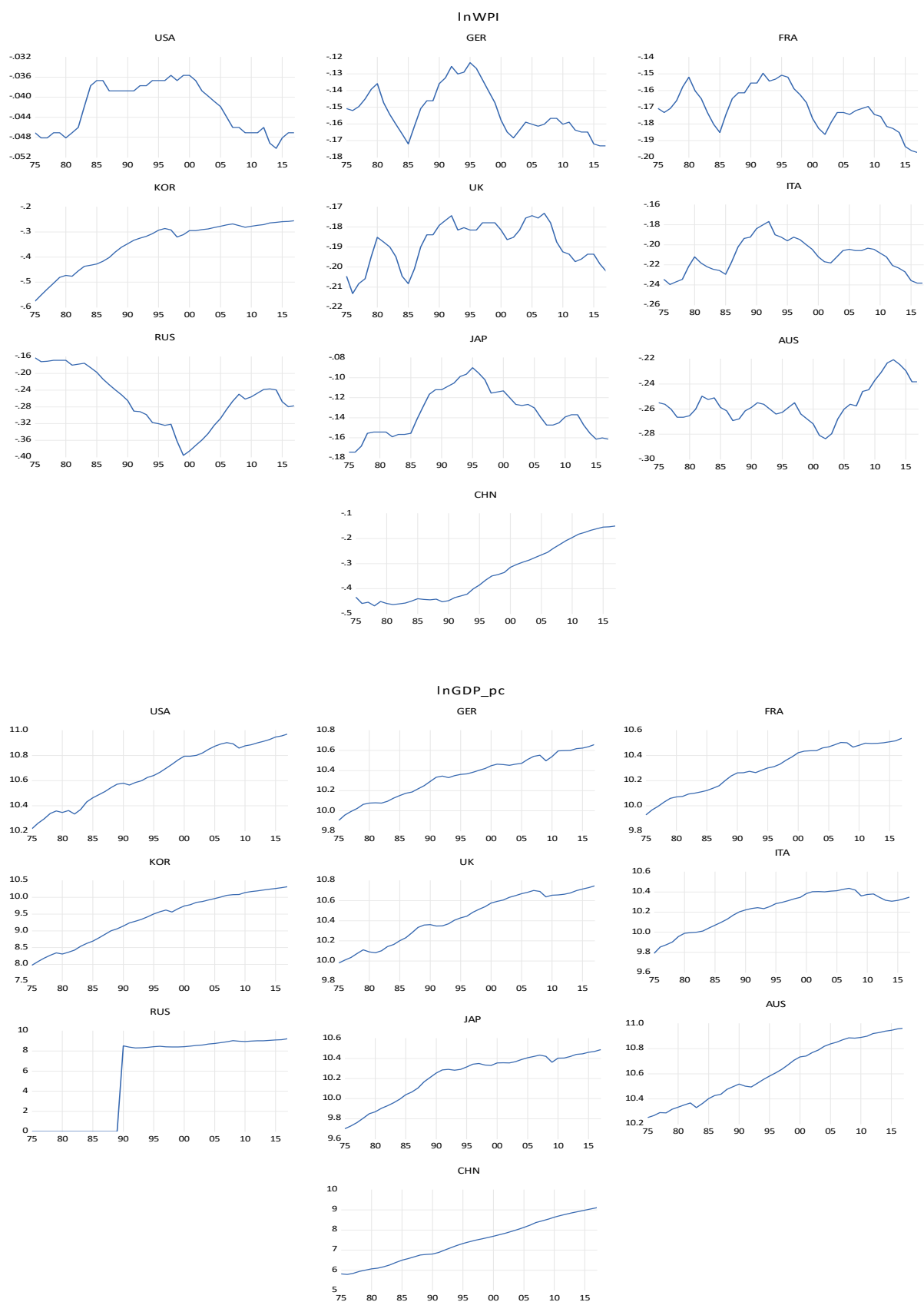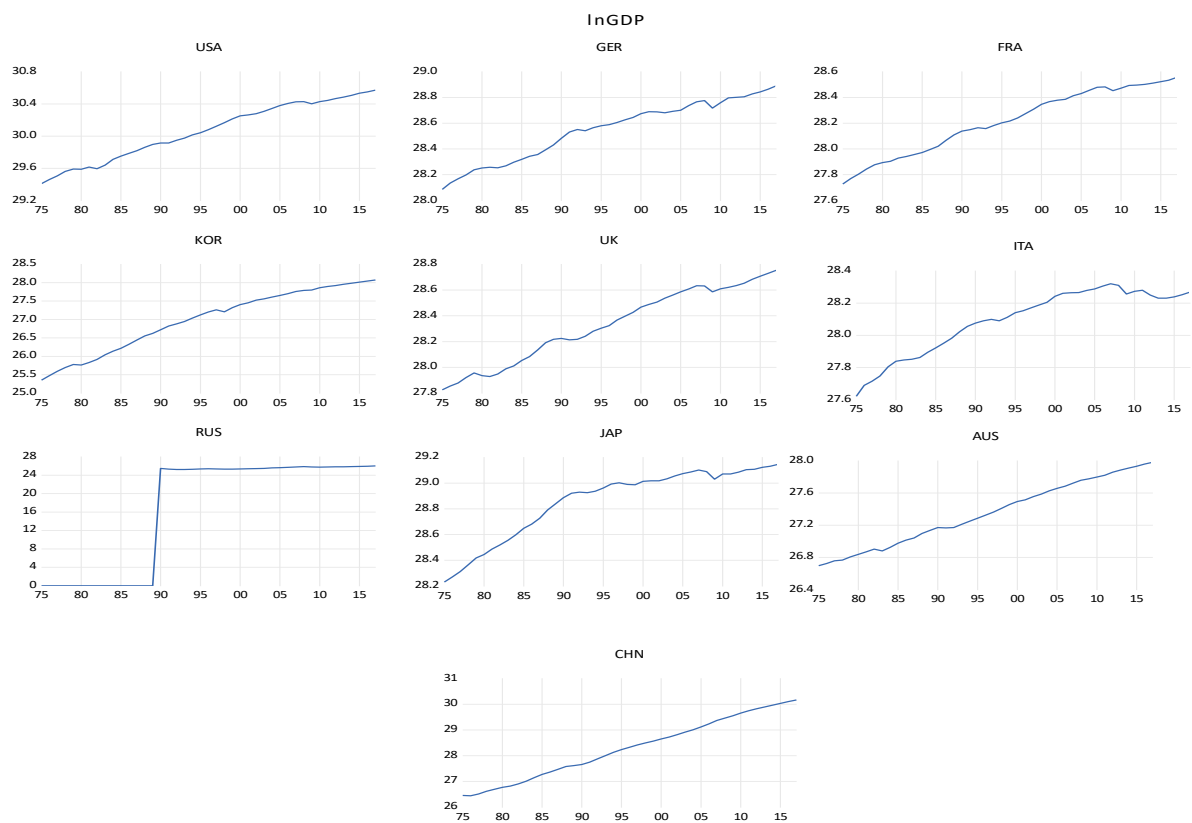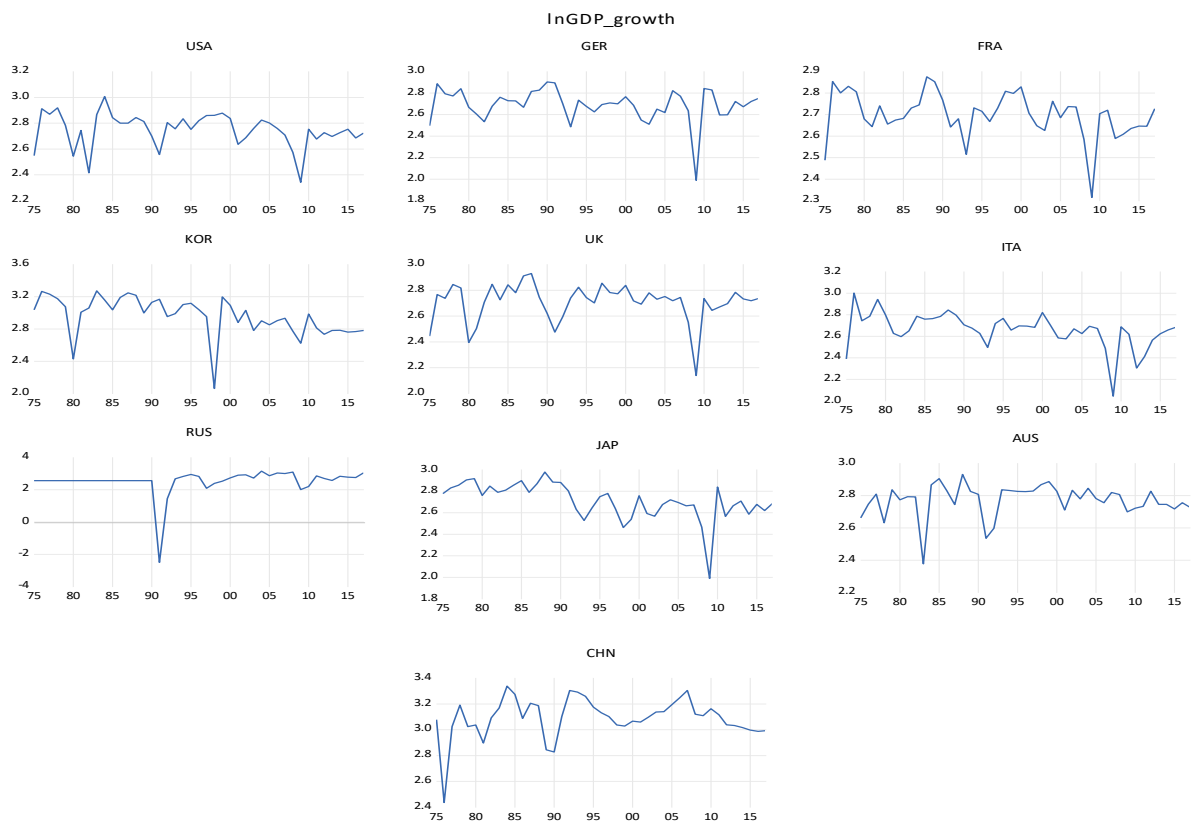
COUNTRY-OF-ORIGIN: LITERATURE REVIEW

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ABSTRACT

Ever since the publication of the first study about the concept "country-of-origin" in 1965 up to the present day, it has attracted a high level of interest among scholars and practitioners alike. This paper reviews the country-of-origin literature and the relating key terms to show the conceptual development of the "country-of-origin" as a construct. The value and benefit of such Literature Review is to provide scholars and practitioners with a critical appraisal of the existing research on this topic in a chronological perspective. By classifying and evaluating the extant knowledge base of the country-of-origin area and the related key terms, this literature review delineates not only the major themes and issues in the field but identifies and develop avenues for future research as well.
Keywords: country-of-origin, conceptual development of key terms, brand image, consumer ethnocentrism

1. INTRODUCTION

Despite a large body of research, *country-of-origin* effects are still poorly understood. Consumers in developing countries consider various factors when choosing products. It has been reported that some consumers use the country-of-origin (hereinafter referred to as: CO) as an attribute to evaluate products (Hong and Wyer, 1990). The concept CO has been used by many researchers in order to study the context of purchasing products made in the home country vis-à-vis products that are available globally. The concept of CO is viewed as an important cue which would impact consumer decision-making processes. Usually, CO is communicated by the phrase, "Made in (name of country)." Previous research suggests that CO plays a significant role in overall product evaluation. The present paper presents an extensive literature review of CO. The study has been designed from a marketing perspective, but it also tries to identify the relationship between CO and the related key terms. Our paper focuses on the understanding of how CO and the key terms revealed in the literature review are related to each other. CO is defined as the bias toward a product, positive or negative, that results from a consumer's preconceived ideas about the quality of products originating in a particular country. In the period from 1955 to 2001, over 766 works were published on the subject, including 361 journal articles and 7 textbooks (Papadopoulos and Heslop, 2002). This paper considers the literature in the area of CO research based on academic research studies published on this topic. The structure of the paper is as follows. Initially, after the introduction, journal sources will be presented. Then the paper highlights the conflicting views concerning the influence of CO. Further, the paper discusses the literature related to CO and provides a definition of CO, followed by a discussion of the relationship between CO and related key terms. Finally, the paper presents the research results and draws conclusions.

1.1. Objectives of the study
The main objectives of the study are (i) to analyze the work done up to date in CO related studies, (ii) to understand the concept of CO from a marketing perspective and (iii) to understand how CO and key terms are related to each other.

2. JOURNAL SOURCES
We have selected a few major publications which lead to the realization that conflicting views exist on the influence and impact of CO.

2.1. International marketing reviews
Balabanis and Siamagka (2017) indicates that product features other than CO may be more effective in mitigating the negative effects of consumer ethnocentrism (hereinafter referred to as: CET). Moon and Oh (2017) fills the knowledge gap of the CO effect on organizational buyer behavior in international marketing channels. Insch et al. (2017) investigates consumer willingness to pay a premium for domestically manufactured products in the context of a "buy-national" campaign and the role of congruity in determining that willingness. Kim et al. (2017) presents results which provide a basic foundation for establishing marketing strategy based on CO image as a way to enhance the development and image of fashion collection.

2.2. Journals of Business Research
Diamantopoulos et al. (2020) finds that from a managerial perspective, brands benefiting from a really strong CO will generally find it easier to implement a premium pricing strategy. Cowan and Guzman (2020) contributes to the dialogue that country origin influences signal effectiveness, using the corporate brand's country-of-origin sustainability reputation (hereinafter referred to as: COSR). The study of Suter et al. (2017) discusses the country-of-origin-image (hereinafter referred to as: COI) as a country-specific-advantage (hereinafter referred to as: CSA) for internationalized firms.

3. CONFLICTING VIEWS CONCERNING THE INFLUENCE OF CO
As noted above, in the period from 1955 to 2001, over 766 works were published on the subject. Consistent with previous major reviews of the CO literature (Peterson and Jolibert, 1995; Verlegh and Steenkamp, 1999), there is significant evidence that a product's CO is an important factor in explaining product evaluations and choice. In the past 10 years an overwhelming majority (82 per cent: 94 out of 114) of CO studies have made an *empirical* contribution to the literature. In contrast, only 3 studies are of a case-study nature and 17 studies deal with the CO phenomenon conceptually (Magnusson and Westjohn, 2011). Among the case studies, Knight et al. (2007) suggests a very modest CO effect. In contrast, Amine et al. (2005) overcomes the negative CO effect and the significant CO challenge. Kleppe et al. (2002) also recognizes the existence of CO effects in their examination. Thus, based on a sample of three recent case studies, two find evidence of a significant CO effect, whereas one suggests that CO may not be a significant factor. Given the objective of this study to provide a review of the theoretical status of the CO literature, it is beyond the scope of this study to provide a full-scale meta-analysis to draw conclusions on effect size (Magnusson and Westjohn, 2011). According to Magnusson and Westjohn (2011), a coarse depiction can divide studies between those that found significant CO effects and those that did not. Out of the 94 empirical studies, 88 (94 per cent) reported results that suggest that a product's CO matters. There might, of course, be a publication bias skewing these results upward by the fact that studies with significant findings have a higher chance of getting published. However, CO is also one of the most controversial research fields, and many studies reach opposite conclusions (Bhaskaran and Sukumaran, 2007; Pereira et al.,2005; Verlegh and Steenkamp, 1999). Some (e.g. Agrawal and Kamakura, 1999; Ahmed

and d'Astous, 2008; d'Astous and Ahmed, 1999; Laroche et al., 2002) conclude that CO has a significant influence on the choice of a product or service, while others (e.g. Ettenson et al., 1988; Liefeld,1993, 2004; Lim et al., 1994) conclude that the influence of CO is very weak. Despite the efforts of researchers to validate and relate the numerous approaches to CO, recent reviews still deplore the lack of conceptual, methodological and theoretical transparency (Bloemer et al., 2009; Laroche et al., 2005; Papadopoulos and Heslop, 2003; Usunier, 2006; Verlegh and Steenkamp, 1999).

4. COUNTRY-OF-ORIGIN DEFINITIONS IN THE LITERATURE

Country-of-origin is becoming a very important factor in consumer behavior studies. Hence, carrying out research about the factors influencing the consumer decisions are more worthwhile than before. The study of CO has shown many broad ordering effects on consumer behavior. These effects are more specific to the association of product classes to CO (Pecotich and Ward, 2007). The impact of CO on consumer perception of products has been widely studied. Thus, several definitions and conceptualizations have been articulated regarding CO. In 1962, Dichter (1962, p. 162) suggested that country-of-origin (CO) can have a "tremendous influence on the acceptance and success of products". Subsequently, Schooler (1965; 1971) conducted the first empirical tests, which confirmed Dichter's assertion. He labeled CO as "Made-in concept" and claimed that it affected the product's acceptance and success. These studies laid the seminal foundation for what has become one of the most intensely studied topics in the field of international marketing. According to Nagashima (1970) a CO effect works as the picture, the reputation and the stereotype that business people and consumers attach to products of a specific country. CO may also act as a source of country stereotyping, directly affecting consumers' attitudes towards the brand of a country instead of decision making via attribute ratings (Wright 1975). Johansson (1989) argues that CO acts as a summary construct which can only be activated if the consumer is familiar with the product category. Hong and Wyer (1990) argue that CO may be used by consumers as an attribute to evaluate products, while, according to Samiee (1994), the CO effect works as any influence or bias that consumers may hold resulting from the country-of-origin of a product. Elliot and Cameron (1994) define CO as positive or negative influence on consumer choice and behavior towards the product. Given that, "the effect of a product's country-of-origin on buyer perceptions and evaluations has been one of the most widely studied phenomena in the international business, marketing, and consumer behavior literatures" (Peterson and Jolibert, 1995, p. 883). CO is defined as "the country in which the product is made" (Thakor and Katsanis 1997, p.79-80) which is very similar to the definition by Ahmed and d'Astous (1996) who define it as the country where corporate headquarters of the product or brand is situated. It can be inferred from the country of assembly or manufacture, and the country of product design. According to Gurhan-Canli and Maheswaran (2000) CO effects simply the extent to which the place of manufacture influences product evaluations and related decisions. Researchers also defined CO based on the place where the products have been designed, manufactured, developed and assembled (Lin and Chen, 2006; Munjal, 2014). In the past, CO was solely considered as the place where the goods were actually manufactured, but after a lot of research conducted in this field, the definition was widened by Laroche and his colleagues to include "country of assembly, country of design, the location where the headquarters are situated, country of brand and geographic origin of a product" (Laroche et al., 2003). The willingness to buy domestic versus foreign products is influenced by the CO and quality judgements (Cai et al., 2004). Lusk et al. (2006) claim that if the consumer is having less information about the product, then they use CO as indicator of product quality. Not surprisingly, the country-of-origin of a product is of great importance as an informative sign for consumers in making decisions (Solomon et al., 2016).

From the above revealed definitions it seems that the source of all these definitions is Schooler's (1965) "Made-in" concept. It is to be observed that the essence of these definitions has not been changed, however, the definition has been broadening in the past few decades. Consequently, we will use Schooler's "Made-in" label for the definition. It is very important to note that the country-of-origin (CO) and the country-of-origin image (COI) are concepts inextricably connected. CO is exploring the effect of national origin of a certain product which would impact consumer assessments and preferences, whilst COI is the concept which elaborates more on the particular aspects of the country to drive consumer perception and attitudes towards products from a given country (Roth–Diamantopoulos, 2009). The country-of-origin image (COI) represents the home country for a company or the country that consumers infer from the brand name (Mahyari et al., 2018). The country-of-origin image of a product is considered to be a crucial aspect that influences customer perception of the brand (Kim, 1995). Nagashima (1970) describes the concept of country-of-origin as the image that consumers associate with the brands. Shahrokh and Azodi (2013) find that customers incline towards products or services of particular brands that are made in countries associated with positive images.

5. RELATIONSHIP BETWEEN CO AND THE KEY TERMS
5.1. Consumer behavior - purchase intention
In the past few years, markets have become very competitive and firms are finding new ways to attract customers. This has resulted in giving multiple options to consumers before choosing a particular brand. This further effect is called consumer purchase behavior (hereinafter referred to as: CPB). It is very important for companies to understand consumers' purchase behavior as it helps firms to attract and retain customers, which in return helps firms in survival and growth. The theory of consumer behavior encourages the presumption that individuals are rational, i. e. they think and move through various reasoning stages while taking a purchase decision. Engel, Blackwell and Miniard (1995) present a model of consumer purchase decision-making in which they divide the consumer purchase decision process into five stages: (1) need or problem recognition, (2) search for information, (3) evaluation of alternatives, (4) purchase decision and (5) post-purchase behavior. This was further supported by Mowen and Minor (2001). Fishbein and Ajzen (1975) claim that consumer purchase intention can be considered as an important tool to predict consumer buying behavior. Revzani et al. (2012) define purchase intention as the eagerness of the consumers to buy a particular brand. Another study identifies various other factors such as consumer perception, country-of-origin and features of products which all are bound to influence customer purchase intention (Wang et al. 2012). Purchase intention was also defined as a decision an individual makes or behavior an individual show in connection to a product. (Wang and Yang, 2008). Tamas (2015) in his study states that the CO effect is very complex in nature. He found that the effect of country-of-origin on consumer buying behavior is not stable and it changes over a period of time. Lin and Chang (2006) also conclude that CO has direct relation to purchase intention. For the past four decades, the effect of a product's country-of-origin on buyer perception, evaluations and intentions has been one of the most widely studied phenomena in the international business, marketing and consumer behavior literatures. As we mentioned above, Schooler conducted the first empirical test of CO and found that the name of the country specified on the "Made-in" label of a product affected the product's acceptance and success (Schooler, 1965). Since then, numerous studies have supported his contention and have found that both rational and emotional variables link country image to product evaluation and purchase intention (Peterson and Jolibert, 1995; Verlegh and Steenkamp, 1999; Papadopoulos and Heslop, 2002; Kang and Yang, 2010). Since the 1980's there has been substantial literature available on this issue, which clearly establishes the claim that country-of-origin influences consumer purchase intention.

For the past forty years, researchers have been studying the impact of CO on purchase intention. Various reviews of the CO literature (e.g. Bilkey and Nes, 1982; Peterson and Jolibert, 1995; Usunier, 2006) highlight the overwhelming support found for CO's effects on consumer perceptions, evaluations and purchase intentions and scholars argue that CO has a robust effect on product evaluation and purchase intention. Many researchers such as Klein (2002); Lee, Yun and Lee (2005) and Cordell (1992) claim that CO plays a significant role in influencing international markets. Ahmed et al. (2002) state that CO has a direct impact on consumer perception of product attributes which further affects their product evaluation. They also add that consumers come across a vast amount of product information such as packaging, advertising and branding. But still, they use CO as an indicator for product evaluation in some product category. This was further supported by Paswan and Sharma (2004) and Gao and Knight (2007) who also found that CO is as influential element in product evaluation and purchase intention as Brand Image. Although numerous dependent variables have been investigated in CO studies, two appear more popular: *product quality evaluations* and *purchase intentions* (Peterson and Jolibert 1995, Usunier 2006). These two variables capture the majority of dependent variables included in CO studies. CO perceptions activate concepts about the country and the general quality of products manufactured there. These concepts may have a general positive or negative effect on the interpretation of other available product attribute information (Hong and Wyer, 1989). Many studies offer empirical support that the CO of a product does affect purchase intentions (e.g. Lee 1999; Tseng 2001). Verleigh and Steenkamp (1999) distinguish between measures of perceived quality and purchase intentions and state that judgments regarding perceived product quality and purchase intentions can be formed independent of each other. Liefeld and Wall (1991) found in their study that country-of-origin is very important to consumers as it helps in comparing quality of the product. Consumers consider CO rather than price or brand while assessing the quality of product. This was further supported by Lee and Lee (2009) who claim that consumers use country as an indicator of quality. Lee and Lee (2009) stated in their study that people use country-of-origin as one parameter to evaluate product quality. In connection with the theory by Verleigh and Steenkamp (1999), we will investigate only purchase intention. Up until today, the effect of country-of-origin (CO) on consumers' perceptions and purchasing intentions is a common theme in marketing research (Bloemer, Brijs and Kasper, 2009; Usunier, 2006) and the literature reviewed above shows that there is a tangible relationship between CO and purchase intention. It is important to highlight that while CO being one of the extrinsic cues that influences consumers purchase intention considerably, the brand is also a variable (extrinsic cue) that works as a summary in formulating purchasing intentions (see also Erickson et al., 1984).

5.2. The halo effect
The 'halo' perspective (Bilkey and Nes, 1982) suggests that CO is used as a halo which consumers use to infer judgment of products with which they are unfamiliar and lack information for product evaluations. They identify the following stages: (1) halo effect, (2) summary construct and (3) default heuristic. Common among all of these theoretical lenses is that decision-making is viewed as a cognitive -at least somewhat rational - process. It was found that there are various factors that affect consumer behavior and CO is one such attribute. When buyers have to choose from a wide range of products, they use a "halo effect" regarding the CO for product evaluation. This gains further support in (Hong and Wyer, 1989) when testing the effects of country-of-origin on consumer behavior. When consumers are given factors such as country-of-origin, brand image or price of a product, it can be observed that the effect works in two ways including the halo effect and the summary construct. The central tenet of the previous CO studies is that the association of a country and its products is based on a halo effect, which means that consumers use country image in product evaluation (Han, 1989).

Whenever beliefs about a country are positive, evaluation of the country's products and brands will also be positive.

5.3. Extrinsic and intrinsic cues

According to Bilkey and Nes (1982), one of the most popular approaches towards the use of CO-cues is the cognitive approach which sees a product as a cluster of cues. This approach distinguishes between product-intrinsic cues (such as taste, design, material, and performance) and product-extrinsic cues (such as price, brand name, store reputation, warranty and CO). Similar to the above mentioned factors, the focus on CO rests on the assumption that consumer decision-making is a cognitive (and somewhat rational) process (Bloemer et al., 2009). From a cognitive-process perspective, products consist of a collection of information cues which consumers rely on when making purchase decisions. Product attributes, such as the physical make-up of the product, including material, color, technical specifications, performance, taste, texture and design, have traditionally been referred to as intrinsic cues. On the other hand, consumers are believed to make inferences about the value of product information cues as a quality indicator and then combine judgments of all the cues available in order to obtain an overall product evaluation (Jacoby et al., 1971). According to this perspective, both intrinsic cues (design, shape, etc.) and extrinsic cues (price, brand name, etc.) are needed in order to evaluate a product (Jacoby et al., 1971). It is important to highlight that the CO can have a manipulative effect without changing the physical product, typically operationalized or communicated through the phrase "Made-in", constituting an extrinsic cue (Thorelli et al., 1989). The above mentioned have been supported by (Bredahl, 2003) and (Zhang and Kare, 2009) as well who argue that extrinsic cues, such as CO, can provide a cognitive shortcut when intrinsic cues are difficult to obtain, the motivation to understand intrinsic cues is lacking, or the consumer seeks to expedite the decision process. However much preferred, intrinsic cues are not always readily available prior to purchase, which forces consumers to rely on aspects external to the product, such as reputation, brand equity, price, brand name, and *country-of-origin* (Liefeld, 1993; Srinivasan et al., 2004; Zellner and Durlach, 2003). According to Bilkey–Nes (1982) the image of a country, in the formulation of the overall image of a product, is one of the numerous extrinsic cues, such as price and brand name, and consumers are prone to approach brands based on portrayed positive or negative attributes of a given country. Researches also show that country-of-origin as an extrinsic cue helps people in judging as consumers feel that the evaluation of extrinsic cues is more convenient than that of intrinsic cues. Lou and Johnson (2005) conclude that CO can be used as predictor to study customer preferences and thoughts. They further add that it is easier to study extrinsic cues rather than intrinsic factors. After all, it is important to highlight that CO is one of the extrinsic cues that influences consumers purchase intention considerably.

5.4. Country image

The CO impacts consumer perceptions and behaviors through the image of the product's CO. The image is the representation, reputation, or stereotype of a specific country, which consumers associate with the products (Nagashima, 1970, 1977). According to Roth and Romeo (1992), a country's image arises from a series of dimensions that qualify a nation in terms of its production profile. A country image is defined by Martin and Eroglu (1993, p.193.), "as the total of all descriptive, inferential and informational beliefs one has about a particular country. The country image can be utilized by purchasers in product evaluations when they are not so much adept at defining the true quality of country's products before purchases". According to Han (1989), when the consumers are familiar with the products, the COI appears in the form of summary structure, whereas when there is no familiarity with the products, the evaluation emerges in the form of a halo effect.

Below in Figures 1 we can see how consumers develop their intentions to purchase directly or indirectly through the framework of the halo effect mechanism owing to the influence of their prior knowledge, attitudes, beliefs, and country image perception about a certain country.

Halo impact, Adapted by Han (1989)

Country Image → Product Evaluations → Purchase Intentions
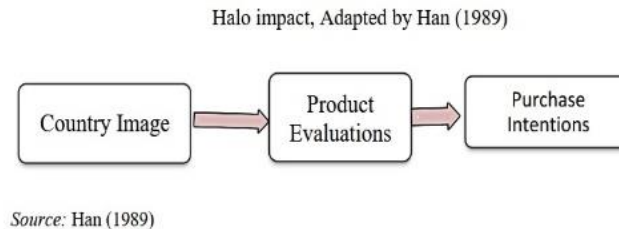
Source: Han (1989)

Figure 1: The Halo Impact
(Source: Han (1989): Country Image: Halo or Summary Construct)

In Figure 1 it can be seen that a country image has an effect on consumer product evaluation, which has a direct effect on consumer purchase intention. According to Roth (2006) the country image is the entirety of an individual's presumed descriptive and informative knowledge about a given country. It not only refers to the country's industrial, technological and political perception but also to emotions towards the country and pride. Malota (2004, p. 50.) summarized this as follows: "Country image is all the descriptive, concluded and informational beliefs that we create about a country. It is the entirety of different beliefs, ideas, impressions that people hold about a given country." The country image is a picture in our consciousness about a country. The country image indirectly includes the products as well; based on the country image we have preconceptions about the products too. The country-of-origin image shall be taken into consideration when examining the country image. The two concepts are in close connection, there is no distinct boundary between them. The country-of-origin image is part of the overall image of a product and it is derived from the country-of-origin. Accordingly, the country-of-origin image arises from stereotypes associated with the product merely because it was made in a given country. The country-of-origin image already comprises the images about products originating from the given country. We refer to the general image/equity of countries as '*country image*'. In contrast, the bonding of country image with a product/brand, i.e. how the Made-in label or consumer perceptions of CO affect product evaluations, is referred to as country-of-origin image (COI). We want to highlight what the theoretical links are between country image and a product's CO image. Product evaluations have the following stages: (1) halo effect; (2) summary construct and (3) default heuristic. Common among all of these theoretical lenses is that decision-making is viewed as a cognitive, and at least somewhat rational, process. In our paper the focus is on the halo effect and its connections. It is to be noted that previous major meta-analyses of the CO phenomenon (Peterson and Jolibert, 1995; Verlegh and Steenkamp, 1999) have not included an assessment of the role of country image or country equity, yet it has received considerable attention, particularly in the past decades (see Roth and Diamantopoulos, 2009 for an extensive review). (Han, 1989) argues that the country image plays a major role in product evaluation and Elliot-Cameron (1994) states that CO is the impact of producing country's image in the consumer decision-making process, which can be influenced positively or negatively. CO, as an extrinsic attribute, is used by buyers where they lack tangible factors. In other words, consumers, by using COI to establish attitudes towards products, are stereotypically associating product categories with specific origins. Salmanli and Omarli (2020) reveal that there is a relationship between the country image and the product country-of-origin image, but the nature and direction of the relationship is not a well-understood phenomenon which should make it a fruitful area for future research.

A detailed understanding of the complex effects that country image and product country-of-origin image have on product evaluations and consumer behavior becomes increasingly important to international marketing managers. According to Salmanli and Omarli (2020) the overall presumption is that brand attitude will have an effect on country image when the country-of-origin of a product is known.

5.5. Brand image

Looking at how national reputation affects perceptions of products, Erickson et al., (1984) argue that the brand is a variable that works as a summary in formulating purchasing intentions. The influence of country-of-origin is about the impact of one's generalizations and perceptions on the evaluation of a particular country's products and brands (Elliot–Cameron 1994). According to Thakor and Kohli (1996) brand image includes symbolic-, function- and usage-based approaches. The symbolic approach shows status, luxury and wealth; the functional brand image shows the brand name; and the usage-based image shows specific features and attributes. Quality and brand names are the most important elements of brand image. According to (Batra et al., 2000) brand personality also plays an important role in determining the brand image of the products, and brand image in turn plays a major role in consumers' perception of the brand, whether the brand is young or old, feminine or masculine, etc. Scholars in the past years have revealed the importance that brands function as vectors of strategies that consumers use in their decision-making processes (Dubois, Czellar, Laurent, 2005; Kapferer, 1997, 1998; Vigneron and Johnson, 1999, 2004). It is usually applied to measure consumer perceptions and purchase intentions, since companies and products are often associated with their countries-of-origin. Contrary to the former studies, (White 2012) considers the country-of-origin effect from an inverse perspective. However, (Terpstra and Han, 1988) argue that in fact consumers often infer the CO from the brand name. (Han, 1989) argues that the association of a country and its products is based on a halo effect, which means that consumers use country image in product evaluation. If beliefs about a country are positive, evaluation of the country's products and brands will be positive too. White (2012) also measures how brand image affects country image by asking whether the brand image affects the perception of the country in which the product is made. According to (White 2012) knowledge of the country-of-origin of a brand can enhance the image of the country from which the brand originates.
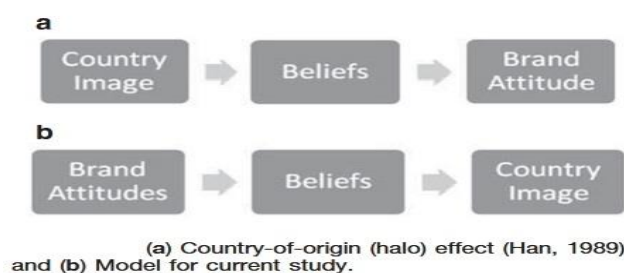
Figure 2: Connection between country image and brand
(Source: Han (1989): Country Image: Halo or Summary Construct)

Later studies followed the observations in (White 2012): according to Pecotich and Ward (2007), a familiar brand is actually able to increase the perception of the CO with which consumers associate the brand, and even to neutralize the negative effect often linked to developing countries. Moreover, sometimes, brand names substitute CO because of their association with specific countries (Bhaskaran and Sukumaran, 2007). According to Keller (2008), brands can simplify choices, be synonymous with a particular level of quality, reduce risk, and generate trust.

There are areas where the image of a country is more positive due to the brand origin which is considered to be a place, region, or country to which the brand is perceived to belong in its target customers' point of view (Kilduff and Tabales 2016).

5.6. Brand origin

The study on CO also includes the concept of brand origin. According to Thakor and Kohli (1996), brand origin can be defined as "the place, region or country to which the brand is perceived to belong by its target consumers". Branding is taken as a cue to infer CO information, whereas brand origin studies focus on integrating the origin cues within brand image (Thakor and Kohli, 1996). In brand origin (BO) studies, the perceived origin of brands is considered to be the same as the country shown in the 'Made-in' label, whereas studies based on CO take the origin concept from the perspective of the country of assembly, or manufacture, country of sourced component, country of design and country-of-origin of culture. BO studies are conducted by taking the concept of origin from within the country, whereas CO studies are conducted by taking the concept of origin from developed to developing to newly industrialized countries (Thakor and Kohli, 1996; Batra et al., 2000; Bandyopadhyay and Banerjee, 2002; Jin et al., 2006). Brand origin association can be described as the activities or processes consumers engage in to associate the brand with the images of a particular country or place (Jin et al., 2006). They also demonstrate that the consumer recognizes the origin of the brand correctly but this recognition rate decreases as the brand approaches a long history of localization.

5.7. Ethnocentrism

Consumer ethnocentrism is a stimulus that motivates people to favor the products of their own country. The effect of country-of-origin is a factor that may cause individuals to prejudge their perceptions and make decisions in advance. Consumer ethnocentrism is the dimension of ethnocentrism in consumer behavior studies, and it depicts more of consumption habits or feelings of consumers towards consumption (Sharma and Shimp 1995). According to Thelen et al., the most important factor for consumers with low ethnocentrism is the price, while the most important factor for consumers with high ethnocentrism is the concept of country-of-origin (Thelen et al. 2006). Even if consumers conceive that imported products are necessary, they opt to buy domestic alternative in the interests of contributing to the country's economy as it clearly results in the decrease of the unemployment rate and raise in the national economic level (Erdoğan–Burucuoğlu 2016). In addition, there is a belief that domestic brands are better quality than foreign brands for ethnocentric consumers (Abdolvand et al. 2016).
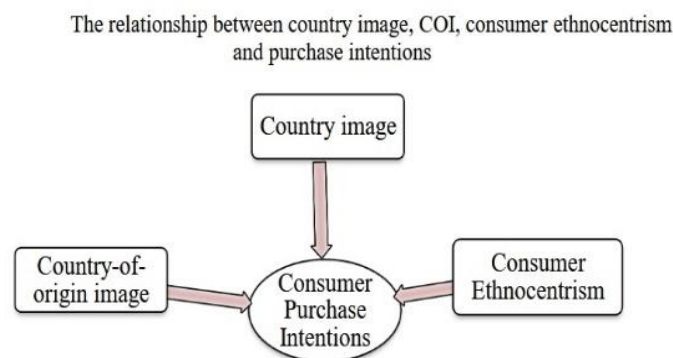
Figure 3: The relationship between country image, COI, consumer ethnocentrism and purchase intention
(Source: Han (1989): Country Image: Halo or Summary Construct)

6. RESEARCH RESULTS AND CONCLUSIONS
6.1. Initial problem space

Based on the study by Müller-Bolch and Kranz (2015), we used the chart method (see Table 1) to illustrate how the processes of synthesizing the key terms in the literature and localizing the research gaps are intertwined. There are many factors such as Brand, Color and Design which consumers consider when they plan to buy something and country-of-origin is one factor that cannot be ignored. Various researchers have also stated that consumers make use of CO as one factor to evaluate their purchase. In current scenarios, the role of the country-of-origin is very important in comparison to former times when only domestic products were available, since the place of manufacture is also one factor which consumers consider while evaluating the product. (Han, 1989) argues that images and beliefs about a country affect the assessment of its products. Initial research about CO looked at how a country's reputation and image affects evaluations of products made in that country, which in turn impacts product evaluation and purchase behaviors of individual consumers (Larouche et al., 2005). Country-of-origin information encompasses a trait that is external to the product itself, serving as a surrogate for quality, performance, prestige etc. which cannot be precisely measured. Consumers often construct product evaluations with incomplete information when they evaluate products in retail stores and, therefore, consumers seem likely to make attribute-related inferences when country-of-origin information is disclosed in such restricted information provision environments (Tran et al., 2017). Berry et al. (2015) propose that a country-of-origin label inevitably activates general perceptions based on the specific country-of-origin, which influences product-related inferences. CO labelling is utilized as a cue in the evaluation of food-related attributes (Tran et al., 2017). The studies of CO-image, perceived product quality and risk have suggested that different CO-images in terms of a country's economic development influence the perceived product quality and risks (Laroche et al., 2003). Obviously, by triggering the perceptions of the manufacturing country and general quality of products manufactured in a given country, the CO-image may have a positive or negative effect on the interpretation of other available information of product attributes and features (Magnusson et al., 2013). Feldmann and Hamm (2015) found that there were research gaps in various areas including cross-national comparisons, the influence of different types of products and food product origin. They found that local food is not perceived to be very expensive, unlike organic food, however, buyers are prone to spend a premium for local food rather than the foreign-made (Beiermann et al., 2017)

Table following on the next page

	CO	purchase intention	halo effect	brand image	country image	Ethno centrism	brand origin
Conceptual study on the CO effect on consumer purchase intention	x	x	x		x	x	
Country-of-origin Vs. Consumer Perception: A Literature Review	x			x			x
Made in China but sold at Fao schwarz country-of-origin effect and trusting beleifs	x	x					
Brand and country-of-origin effect on consumers' decision to purchase luxury products☆	x	x		x	x		
Analysis of mediation effect of country-of-origin image on brand equity	x						
The Effect of Country-of-origin on Consumers Purchase Intention.	x	x	x	x			
Malaysian consumers evaluation of product made in Germany: the CO effect	x						
The impact of country image, country-of-origin image and consumer ethnocentrism on purchase decisions: A study about Azerbaijani food companies' entry into Hungarian Market	x		x		x	x	
Country-of-Origin Effects on Perceived Brand Positioning	x			x	x		
Is there a country- of- origin theory?	x		x		x		
The Cognitive, Affective and Conative Components of Consumer Behavior in the Context of Country-of-origin: A Case of Slovakia							
Brands and national image: An exploration of inverse country-of-origin effect	x	x		x	x		
Analysis of mediation effect of country-of-origin image on brand equity	x						

Table 1.

CO and the related key terms are revealed in the examined papers and the authors investigated the main key terms and their connection in several countries, including Hungary. Hence these papers examined the above from an external viewpoint.

6.2. Levels of observation

The papers referred to in Table 1 examined the CO on a country level. There is no distinction between the examined links between CO and the key terms. The study of Godey et al. (2012) aimed to update the factors influencing consumer purchase of luxury goods and, more specifically, to consider the combined effect of brand and country-of-origin (CO) on the purchasing decision. The study includes administering a questionnaire online in seven countries (China, France, India, Italy, Japan, Russia, and the USA) to a total sample of 1102 respondents. In their findings they revealed the relative importance of CO for consumers making purchasing decisions relating to luxury goods. In another paper Salmanli and Omarli (2020) notice that Hungarians do not have any objection towards Azerbaijani product COI. These two variables also confirmed, with statistical analysis of dependent variable of purchase intentions, that there is a relationship between positive country image, COI and purchase intentions. Cvirik (2021) in his study examined the Slovak attitude to the Hungarian nation and to Hungarian country-of-origin. The results indicated a clear link between the components of consumer behavior in the context of country-of-origin, completing a country-of-origin theory. In the above mentioned papers, CO and the connections between the related key terms are examined from outside the country, i.e. Slovakian perception of Hungarian product, but they did not explore the insider connection, so inside the country, i.e. within Hungary what the Hungarians' attitudes are to Hungarian products. We have explored CO link to the key terms from an inside perspective in an organizational level in their own environment, but we have not passed any judgement

deciding which of the two approaches should be the better way of examination. Moreover, there were no examinations on the combination of CO and country-of-origin as a trademark in one piece.

6.3. Research gap and conclusion

In light of this, the research problem to be examined is about how the perception of consumers is impacted by the information they get, and why consumers give preferences to a particular product focusing on its origin. The academic literature presented varies from the early academic researches to the current ones, thus we have provided a summary of all current views and researches available in this research area. In the academic literature there is still a gap concerning the examination of CO on an organization level from an insider perspective in Hungary.

7. FURTHER RESEARCH

In further research we are committed to examine CO in Hungary as a trademark and as a brand in one unit. That means, since the former studies do not identify CO as a trademark, we intend to reveal the connection between CO and country-of-origin as a trademark. We intend to fill the gap and scrutinize CO as a trademark on an organization level by some companies. Furthermore, our aim is to prove that CO, as a trademark in Hungary, namely the Hungarian product trademark can be used also as a brand in the Hungarian market by those Hungarian companies which are situated in this environment. Namely, we shall explore why it is worth for companies to have the Hungarian product trademark on their products and how companies can utilize it. Moreover, how companies can use Hungarian product trademark in their marketing strategies. The originating country might appear as an assured quality measure of the product or service itself, and affect the customer towards buying through the shared belonging to the given country. Therefore, using a country-of-origin sign when selling a product or a service aims at the market segment in order to rely on overt or covert experience and positive emotions related to the originating country. Although this effect seems simple, we are convinced that the complex cooperation of law, economics and psychology is required to increase the buying intentions of the customers.

LITERATURE:

1. Abdolvand, M. A., Farzin M., Asl A. M. and Sadeghian M. (2016): *The Effect of Consumer Awareness on Consumer Ethnocentrism and Loyalty Regards to the Functions Of International Brands*. International Journal of Life Science and Pharma Research, Special issue, 2: 102–114.
2. Agrawal, J. and Kamakura, W. A. (1999): *Country-of-origin: a competitive advantage.* International Journal of Research in Marketing;16(4):255–67.
3. Ahmed, S A. and d'Astous, A., (1996) *Country-of-origin and Brand Effects: A Multi Dimensional and Multi Attribute Study*, Journal of International Consumer Marketing, Vol. 9, No. 2, pp. 93-115,
4. Ahmed, Z.U., Johnson, J. P., Ling, C.P., Fang, T. W., Hui, A. K. (2002) *Country-of-origin and brand effects on consumers' evaluations of cruise lines.* International Marketing Review, 19(3), 279-302. http://dx.doi.org/10.1108/02651330210430703
5. Ahmed, S.A. and d'Astous, A. (2008) *Antecedents, moderators and dimensions of country-of-origin evaluations."* International Marketing Review;25(1):75-106
6. Bandyopadhyay, S. and Banerjee, B., (2002)*"A Country-of-origin Analysis of Foreign Products by Indian Consumers*, Journal of International Consumer Marketing, Vol. 15, No. 2, pp. 85-109.

7. Bhaskaran, S. and Sukumaran, N., (2007) *National culture, business culture and management practices: consequential relationships?* Cross-Cultural Management; 14(1):54-67.
8. Batra, R., Ramaswamy, V., Alden, D.L., Steenkamp, J- B.E.M. and Ramachander, S., (2000) *Effects of brand local and nonlocal origin on consumer attitudes in developing countries,* Journal of Consumer Psychology, 9(2), 83–95.
9. Beiermann, J. – Ritten, C. J. – Thunström, L. – Ehmke, M., (2017) *Measuring the value of information – revealed preferences for country-of-origin information.* Journal of Behavioral and Experimental Economics, 71, 96-104. doi:10.1016/j.socec.10.002
10. Bilkey, WJ, Nes, E. (1982) *Country-of-origin effects on product evaluations. Journal of International Business Studies* 1982:13:89–99. [Spring/Summer].
11. Bloemer, J., Brijs, K., Kasper, H. (2009) *The CO-ELM model: a theoretical framework for the cognitive processes underlying country-of-origin-effects.* European Journal of Marketing 2009; 43 (1–2):62–89.
12. Bredahl, L., (2003) *Cue utilisation and quality perception with regard to branded beef* Food Quality and Preference (2003), 15, 65–75.
13. Cai, Y. and C. B. (2004) *Country -of-Origin effects on consumer willingness to buy foreign products:An experiment in consumer decision making.* Consjumer Interests AnuuaL (2004), 98-105.
14. d'Astous, A. and Ahmed, SA. (1999) *The importance of country images in the formation of consumer product perceptions.* International Marketing Review 1999;16(2–3):108–26.
15. Cordell, V.V. (1992) *Effects of consumer preferences for foreign sourced products* Journal of International Business Studies, Vol. 23, No. 2, pp.251–269.
16. Čvirik, M., (2021) *The impact of consumer ethnocentrism and the patriotism on judgement for selected domestic products: the case of Slovakia*, Central European Business Review. Volume 10 | Issue 3 | 2021 https://doi.org/10.18267/j.cebr.245
17. Dichter, E (1962) *The world customer.* Harvard Business Review, 40. ; 1962. p. 113–22. [July–August].
18. Dubois, B., Czellar S., Laurent G. (2005) *Consumer segments based on attitudes toward luxury: empirical evidence from twenty countries.* Marketing Letters 2005;16(2):115–28.
19. Elliott, G.R., – Cameron R.C., (1994): *Consumer perception of product quality and the country-of-origin effect.*
20. Engel, J.B., (1995). *What do you want your brand to be when it grows up? Big and strong?* Journal of Advertising research, 37(6). 23-36
21. Erdoğan, E., – Burucuoğlu, M., (2016) *The Effect of Consumer Ethocentrism, Cosmopolitanism and Patriotism on Product Evaluations in Turkey*International Marketing Trend Congress
22. Erickson, GM, Johansson, JK, Chao, P. (1984) *Image variables in multi-attribute product evaluations: country-of-origin effects.* The Journal of Consumer Research 1984:11:694–9. [September].
23. Ettenson, R., Wagner, J., Gaeth, G. (1988) *Evaluating the effect of country-of-origin and the Made in the USA campaign: a conjoint approach.* Journal of Retailing 1988:64(1):85
24. Feldmann, C., and Hamm, U. (2015) *Consumers' perceptions and preferences for local food: A review* Food Quality and Preference, 40, 152-164.
25. Fishbein, M. and Ajzen I. (1975) *Belief, attitude, intention and behavior: an introduction to theory and research.* Addison –Isley.
26. Gao, H.- Knight, J. (2007) *Pioneering advantage and product-country image: evidence from an exploratory study in China* Journal of Marketing Management 2007, Vol. 23, No. 3-4, pp. 367-385 ISSN0267-257X print /ISSN1472

27. Godey, B., Pederzoli, D., Aiello, G., Donvito, R., Chan, P., Oh, H., Singh, R., Skorobogatykh, I. I., Tsuchiya, J., Weitz, B. (2012) *Brand and country-of-origin effect on consumers' decision to purchase luxury products* Journal of Business research, 2012 Vol 65. Pages 1461-1470

28. Gurhan-Canli, Z., and Maheswaran, D., (2000) *Determinants of Country-of-Origin Evaluations,* Journal of Consumer Research, 27 (1), 96- 108.

29. Han, C. M. (1989) *Country Image: Halo or Summary Construct*, Journal of Marketing Research, Vol. 26, No. 2, (1989), pp. 222-229.

30. Hong, S., –Wyer, J. R., (1989) *Effects of Country-of-Origin and Product-Attribute Information on Product Evaluation: An Information Processing Perspective.* Journal of Consumer Research (1989), 16, 2, 175. doi:10.1086/209206

31. Hong, S.T. and Wyer, R.S. Jr., (1990) *Determinants of product evaluation: effects of the time interval between knowledge of a product's country-of-origin and information about its specific attributes*, Journal of Consumer Research, Vol. 17, December, (1990), pp. 277-88.

32. Jacoby, J.J., Olsen, J., and Haddock, R.A., (1971) *Price, Brand Name and Product Composition Characteristics as Determinants of Perceived Quality,* Journal of Applied Psychology, (1971), 56(6), 570-579.

33. Jin, Z., Chansarkar, B. and Kondap, N.M., (2006) *Brand Origin in an Emerging Market: Perceptions of Indian Consumers.* Asia Pacific Journal of Marketing and Logistics, Vol. 18, No. 4, (2006), pp. 283-302.

34. Johansson, J.K., (1989) *Determinants and Effects of the Use of Made in Labels,* International Marketing Review, p. 47-58. (1989)

35. Kapferer, J.N. (1997) *Managing luxury brands.* Journal of Brand Management 1997;4(4): 251–60.

36. Kapferer, J.N. (1998) *Why are we seduced by luxury brands.* Journal of Brand Management 1998;6 (1):44–9.

37. Keller, K. L. (2008) *Strategic brand management.* 3rd ed. Upper Saddle River: Prentice Hall; 2008.

38. Kilduff, K., – Tabales, J.M., (2016) *Country Branding and its effect on the consumer in the global market.* Cuadernos De Gestión, (2016), 17, 1, 83–104.

39. Kim, C.K. (1995) *Brand popularity and country image in global competition: managerial implications.* Journal of Product and Brand Management, Vol. 4, No. 5, (1995) pp.21–33.

40. KLEIN, J.G. (2002) *Us versus them, or us versus everyone? Delineating consumer aversion to foreign goods.* Journal of International Business Studies, (2002), 33(2), 345-363.

41. Laroche, M., Tomiuk, MA., Bergeron, J., Barbaro-Forleo, G. (2002) *Cultural differences in environmental knowledge, attitudes, and behaviours of canadian consumers.* Canadian Journal of Administrative Sciences 2002;19(3):267–83

42. Laroche, M., Papadopoulos, N., Heslop, L. and Bergeron, J. (2003), *Effects of subcultural differences on country and product evaluations.* Journal of Consumer Behaviour, 2(3), 232.

43. Laroche, M., Papadopoulos, N., Heslop, LA, Mourali, M. (2005) *The influence of country image structure on consumer evaluations of foreign products.* International Marketing Review 2005:22(1):96-115.

44. Lee, W.N., Yun, T.W. and Lee, B.K. (2005) *The Role of Involvement in Country-of-origin Effects on Product Evaluation: Situational and Enduring Involvement.* Journal of International Consumer Marketing, (2005), 17(2,3), p. 51-59.

45. Lee, J.K., and Lee, W.N., (2009) *Country-of-origin effects on consumer product evaluation and purchase intention: the role of objective versus subjective knowledge.* Journal of International Consumer Marketing, (2009), 21(2), 137-151. http://dx.doi.org/10.1080/08961530802153722

46. Liefeld, J.P. (1993) *Experiments on country-of-origin effects: review and meta-analysis of effect size.* In: Papadopoulos N, Heslop LA, editors. Product–country images: importance and role in international marketing. New York, NY: International Business Press; 1993. p. 117–56.

47. Liefeld,, J.P. (1993) *Experiments on country- of- origin effects: review and meta- analysis of effect size.* In: N. Papadopoulos and L.A. Heslop (eds): Product and Country Images: Impact and Role in International Marketing: New York: Haworth Press, (1993) pp. 1117–56.

48. Liefeld, J.P. (2004) *Consumer knowledge and use of country-of-origin information at the point of purchase.* Journal of Consumer Behaviour 2004;4(2):85–96.

49. Lim, J.S., Darley, W.K., Summers, J.O. (1994) *An assessment of country-of-origin effects under alternative presentation formats.* Journal of the Academy of Marketing Science 1994;22(3):274–83

50. Lin, L.Y., and Chen, C.S., (2006*) The influence of the country-of-origin image, product knowledge and product involvement on consumer purchase decisions: an empirical study of insurance and catering services in Taiwan.* Journal of Consumer Marketing (2006), 23(5), 248-265. http://dx.doi.org/10.1108/0736376061068165

51. Liu, S. L. and Johnson, K. F. (2005) *The Automatic Country-of-origin Effects on Brand Judgments.* Journal of Advertising (2005), Vol. 34, No. 1, pp. 87-97.

52. Lusk, J. B., (2006)*"Consumer Behaviour, Public Policy and Country-of-Origin Labeling."* Review of Agricultural Economics (2006), 28(2), 284-292.

53. Magnusson, P., –Westjohn, S.A., (2011) *Is there a country-of-origin theory.* Handbook of Research in International Marketing, Second Edition 2011.

54. Magnusson, P., –Westjohn, S.A., –Semenov, A. V., –Randrianasolo, A.A., –Zdravkovic, S., (2013) *The role of cultural intelligence in marketing adaptation and export performance.* Journal of Marketing Research (2013), 21, 4, 44–61.

55. Mahyari, H.K., Abareshi, A., Asian, S., and Pool, J.K., (2018) *An examination of the interplay betIen country-of-origin, brand equity, brand preference and purchase intention toward global fashion brands.* International Journal of Business Forecasting and Marketing Intelligence, Vol. 4, No. 1, p.43 [online] https://doi.org/10.1504/IJBFMI.2018.10009308.

56. Malota, E., (2004) *Az országeredet imázs I.* Marketing Menedzsment (2004), Vol. 38(4), p. 50. [5.]

57. Martin, I.M., – Eroglu, S., (1993) *Measuring a multi-dimensional construct: Country image.* Journal of Business Research (1993), 28, 3, 191–210. doi:10.1016/0148-2963(93)90047-s

58. Mowen, J. A., (2001) *Consumer behaviour: A framework (2nd ed.).* Prentice Hall-New Jersey. (2001)

59. Müller-Bolch, C. and Kranz, J. (2015) *A Framework for Rigorously Identifying Research Gaps in Qualitative Literature Reviews.* International Conference on Information Systems 2015, ICIS 0072-2015.R1

60. Nagashima, A.A. (1970) *Comparison of Japanese and US attitudes toward foreign products.* The Journal of Marketing 1970;34(1):68–74.

61. Nagashima, A.A. (1977) *Comparative 'made-in' product image survey among Japanese businessmen.* The Journal of Marketing 1977;41(3):95-100.

62. Papadopoulos, N., and Heslop, L., (2002)*"Country equity and country branding: Problems and prospects."* Journal of Brand Management (2002) 9(4/5): 294-314.

63. Papadopoulos, N., Heslop, LA. (2003) *Country equity and product–country images: state-of-the-art in research and implications.* In: Jain SC, editor. Handbook of research in international marketing. Northhampton, MA: Edward Elgar Publishing; 2003. p. 402–33.

64. Paswan, A.K., and Sharma, D. (2004) *Brand- country-of-origin (CO) knowledge and CO Image: investigation in an emerging franchise market.* Journal of Product and Brand Management (2004), 13(3), 144–55.

65. Pecotich, A., Ward, S. (2007) *Global branding, country-of-origin and expertise. An experimental evaluation.* International Marketing Review 2007;24(3):271–296.

66. Pereira, A., Hsu, CC, Kundu, SK. (2005) *Country-of-origin image: measurement and cross-national testing.* Journal of Business Research 2005;58:103–6.

67. Peterson, RA., Jolibert, AJP. (1995) *A meta-analysis of country-of origin effects.* Journal of International Business Studies 1995;26(4):883-99.

68. Roth, MS., Romeo, GB.. (1992) *Matching product category and country image perceptions: a framework for managing country-of-origin effects.* Journal of International Business Studies 1992;23(3):477–97. [Winter].

69. Roth, K.P. and Diamantopoulos, A., (2006) *The Country Image Construct: Literature Review and Future Research Needs* , in Genctürk, E. (ed.), Proceedings of the 2006 Annual Conference of the Consortium of International Marketing Research (CD-Rom), Istanbul, Turkey, 26-30 May.

70. Roth, K.P. and Diamantopoulos, A. (2009) *Advancing the country image construct.* Journal of Business Research 2009;62:726–40.

71. Salmanli, I. – Omarli, S. (2020) *The impact of country image, country-of-origin image and consumer ethnocentrism on purchase decisions: A study about Azerbaijani food companies' entry into Hungarian Market.* Udvari B. (ed.) 2020: Proceedings of the 4th Central European PhD Workshop on Technological Change and Development. University of Szeged, Doctoral School in Economics, Szeged,2020 pp 93–114.

72. Samiee, S., (1994) *Consumer Evaluation of Products in a Global Market.* Journal of International Business Studies (1994), 25 (3), p.579-604.

73. Schooler, R.D., (1971) *Bias phenomena attendant to the marketing of foreign goods in the US.* Journal of International Business Studies (1971), 2(2), 71–80.

74. Schooler, R.D., (1965) *Product bias in the Central American common market.* Journal of Marketing Research (1965), 2(4), 394–7.

75. Shahrokh, Z.D., and Azodi, A.D., (2013) *The effect of country-of-origin image on brand equity and purchase intention.* Journal of Applied Environmental and Biological Sciences (2013), Vol. 3, No. 12, pp.52–61.

76. Sharma, S., Shimp, T., and Shin, J., (1995) *Consumer Ethnocentrism: A Test Antecedents and Moderators.* Journal of the Academy of Marketing Science (1995), 23, 26-37. https://doi.org/10.1007/BF02894609

77. Solomon, M.R., – Bamossy, G., – Askegaard, S., – Hogg, M., (2016) *Consumer behaviour: A European perspective.* Harlow: Pearson. (2016)

78. Srinivasan, N., Jain, SC, Sikand, K.(2004) *An experimental study of two dimensions of country-of-origin (manufacturing country and branding country) using intrinsic and extrinsic cues.* International Business Review 2004;13:65–82.

79. Terpstra, V., Han, CM. (1988) *Country-of-origin effects for uni-national and bi-national products.* Journal of International Business Studies 1988;19(2):235–55.

80. Thakor, M.V., and Katsanis, L.P., (1997) *A Model of Brand and Country Effects on Quality Perceptions: Issues and Implications.* Journal of International Consumer Marketing, (1997):9(3):79-100.

81. Thakor, M.V. and Kohli, C.S. (1996) *Brand Origin: Conceptualization and Review.* Journal of Consumer Marketing (1996), Vol. 13, No. 3, pp. 27-42

82. Thelen, S., –Ford, J.B., –Honeycutt J. E. D., (2006) *The impact of regional affiliation on consumer perceptions of relationships among behavioral constructs.* Journal of Business Research (2006), 59, 9, 965–973.

83. Tran, T.T., – Moritaka, M., – Fukuda, S., (2017) *Country-of-origin, Price Consciousness, and Consumer Innovativeness at Food Service Outlets in Developing Markets: Empirical Evidence from Brands of Imported Beef in Vietnam.* International Journal of Marketing Studies 9, 3, 50. doi:10.5539/ijms.v9n3p50

84. Usunier, J-C. (2006) *Relevance in business research: the case of country-of-origin research in marketing.* European Management Review 2006;3:60–73.

85. Verlegh, PWJ., Steenkamp, JBEM. (1999) *A review and meta-analysis of country-of-origin research.* Journal of Economic Psychology 1999;20:521-46.

86. Vigneron, F., Johnson, L W. (1999) *A review and a conceptual framework of prestige seeking consumer behaviour.* Academy of Marketing Science Review 1999;3(1).

87. Vigneron, F. and Johnson, L W. (2004) *Measuring perceptions of brand luxury.* Journal of Brand Management 2004;11(6):484–506.

88. Wang, X. and Yang, Z., (2008) *Does country-of-origin in relationship between brand personality and purchase intention in emerging economies. Evidence from China's auto industry.* International Marketing Review 25(4), 458-474.

89. Wang, C. L., (2012) *Country image, product image and consumer purchase intention: Evidence from an emerging economy.* International Business Review.

90. White, C. L. (2012) *Brands and national image: An exploration of inverse country-of-origin effect.* Place Branding and Public Diplomacy (2012) 8: 110-118. doi: 10.1057/pb.2012.6; published online 13 June 2012

91. Wright, P. (1975) *Consumer Choice Strategies: Simplifying vs. Optimizing.* Journal Marketing Research.

92. Zhang, Y. and Khare, A., (2009) *The Impact of Accessible Identities on the Evaluation of Global vs. Local Products.* Journal of Consumer Research, Vol. 36, No. 3, pp. 524-537.

93. Zellner, D.A., and Durlach, P., (2003) *Effect of color on expected and experienced refreshment, intensity and liking of beverages.* American Journal of f Psychology, 116(4), 633–47.

CONFESSION RADIO PROGRAMS: WHAT UTILITY FOR THE MOROCCAN AUDIENCE ("STUDIES IN LANGUAGE & SOCIETY")

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ABSTRACT

In the era of globalization, social media seems to be the outstanding reflection of social reality and change. Social networks have become wildly used by the growing population of young urban, rural, and non-literate demographic groups in the developing world. This qualitative shift also shows a strong ability to amplify the voice of marginalised and excluded groups. It likewise contributes in the spectacular regression of the notion of privacy among people. Thus, most users of social media including journalists find no harm in probing in a number of issues that have been deemed sacred or tabooed. Journalism ethics seem to be changing and newcomers seem to be able to introduce new normative even audacious values. This development is not only concerned with social media, it also pierced the radio realm. The present paper therefore sheds light on the radio capacity to accede realities often taken as exclusively restricted and private. Observers of the Moroccan radio landscape commonly agree that most Moroccan radio stations tend to favor social programs in comparison with, not to say to the detriment of other program types; the issue of what is now called "Confession Programs" which stand for the archetype of stations' aura have become mostly solicited among listeners. The present study seeks to study this rising trend by unraveling the religious, psychological and sociological implications. It attempts to explore the Moroccan audience' perceptions in relation to these programs and their impact on listeners' behaviour. The three angles stated above find premise on a number of radio programs pretending, or at least aim to bring solution to purely psychological crises. The research design is ethnographic; it focuses on collecting data basing on respondents' personal views and experiences aloof from any convincing or orienting acts. In this respect, the study makes use of the semi-structured interviews as the main data collection instrument. The population sample comprises 50 respondents divided into two categories namely (i) the direct contact sample and (ii) the facebook sample. The study seeks to answer two research questions: (i) Do respondents have the same perception of confession programs. (ii) What are the religious, psychological and sociological implications of their prevalence?
Keywords: Confession, Catharsis, Audience Rate, Social Awareness, Media Success

1. INTRODUCTION

The audiovisual liberalization project was first introduced in 2002. The initiative spawned a positive echo among the Moroccan public who was pleased to witness the inauguration of new generation of private radio stations. The experience led to the rise of a new and unprecedented revolution in media communication. It was believed that radio programs would hence have larger horizons to tackle authentic issues regarding the listeners' chief concerns. Paradoxically enough, a close look on most programs schedules has revealed a strong tendency to present and encourage programs with social and psychological touch. Private stations indulged in a ferocious competition to attract more listeners; stations were therefore predisposed to meet the public expectations and reflect social reality with all its abnormalities instead of presenting valued programs susceptible of enhancing the recipients' levels of awareness. Most Moroccan radio stations, either private or public, become essentially oriented toward consultation

programs with socio-psychological concerns. Programs are fundamentally based on the telling of personal stories aiming to promote a sense of understanding, unity together with social awareness of important issues. Confession was hence considered as an inexpensive, safe and accessible communication medium that manages to reach all levels of listeners. Hence, its role for emotional integration and psychological sanity sounds legitimate and praise-worthy. "It is often on radio, with its ability to handle facts, issues and ideas without visual distraction, that this endeavor is most effectively performed." Starkey (2005).

2. CONTEXT OF THE STUDY

The Moroccan audiovisual landscape has witnessed an outstanding rise of confession programs and reality TV programs with social touch. These new waves of social programs have managed to realize the highest audience rates. By way of exemplification, we can here state "Al Khait Lebiad, Kissat Annass and Hdeeth Ou Maghzal" presented respectively by Nassima Alhor on 2M TV, Nouhad Ben Aguida on Médi 1 TV and Sanaa Azaim on Radio Aswat. The three programs, together with other similar ones broadcast by other stations, attract the attention of large layers of Moroccans who intend to know more about human, psychological and social cases that unravel the sordid, sometimes the concealed part of the Moroccan social reality. Both TV reality programs and radio confession ones have offered the opportunity to reveal a number of touchy experiences as in cry attacks, laborious confessions, and reconciliation moments alongside with painful souvenirs, which stand traumatic, as they remain deeply rooted in the memory of those who undergo them. Family decline, violence and rape victims; an endless list of social calamities and taboos find refuge in confession in public regardless of the annoying nature of these cases and the multiple repercussions that they may engender on the public.

3. RESEARCH METHODOLOGY

The study adopts the qualitative approach. It uses semi structured interviews for data collection. It investigates respondents' perceptions of the utility of social interactional programs, exemplified by Confession Programs, referred herein by the acronym (CPs), to incarnate the mating experience bringing together the media output and public expectations. It dwells on three main research questions namely (i) Do respondents have the same perception of the CP trend? (ii) What is the psychological account for confession programs in terms of their therapeutic efficacy? (iii) What is the sociological stand point regarding the audience's reaction to Confession Programs? The study seeks to answer two research questions namely (i) Do respondents have the same perception of confession programs? (ii) What are the religious, psychological and sociological implications of their prevalence? The semi structured interviews, conducted in Moroccan Arabic, were essentially anchored on such questions as: What do you think of CPs presented by the Moroccan radio stations? Have you ever taken part in these programs? If so, what was the issue? The sample covers 50 participants. Their ages vary between 18 and 56 years old. They include university students, student journalist, radio program coordinators, public and private sector employees, and housewives. The 50 respondents were equally divided into two categories namely (i) the facebook sample and (ii) the direct contact sample. The choice of the former is twofold; Facebook, among other social media platforms such as Twitter, Instagram, YouTube and others, play preponderant roles in spreading a wide range of information, ideas, values in a considerably short time laps and with the required efficacy; These virtual spaces do by all account contribute in the mobilization of citizens to react, support or even revolt against political, economic, religious or environmental calamities. a case in point is the ferocious campaign launched in 2016 whilst the Moroccan authorities decided to import Italian waists which were entailed by national factories for the sake of energetic purposes; the project was finally prohibited thanks to the public pressure fueled by the Facebook community.

The second rationale is purely methodological; the users of this facility have the possibility to express their opinions without disclosing themselves to the interviewer; thus, benefiting from a minimum of unanimity level that enables them to divulge more authentic personal experiences and provide valuable data. The second sample is interviewed using direct contact. Subjects hosted for the interviews are selected randomly; the only criteria considered in this respect is participants' motivation to take part in the experience. Data were collected in two main ways depending on the targeted audience type. Participants pertaining to the facebook community were solicited via social media to voice out their opinions about the above-mentioned topic. Participants interested in the topic submit their answers online together with some additional information about their ages and educational levels. The direct contact sample as the label suggests, is however contacted directly; through interviews, data was collected using a recording device.

4. RESPONDENTS' PERCEPTIONS OF CPS

The direct contact sample tends to have negative opinions. 18 participants, among the 25 interviewees, see no utility behind listening to programs let alone using them as a solution seeking strategy. This conclusion essentially applies to university students who, as declared by Hanine, an 18 years old student from Casablanca, "… *The fact of telling a personal story on public and expect feedback from unknown listeners sounds implausible*". Nevertheless, 7 respondents see no harm in falling back to CPs as they offer good opportunities to listeners to exteriorize their problems, share their success and failure with the others with an attempt of enlarging the benefits threshold. The Facebook sample however holds positive views. Respondents tend to mainly favor CPs to other program types as they contribute in unveiling a number of phenomena impacting our social tissue. A case in point is what was experienced by Mrs. Sanaa, a 35 years old housewife from Brussels, who reconciled with a family member after resorting to a confession program. Such conclusion is strengthened by 16 participants who support the use of CPs outlet to seek the way out from certain problematic situations against 9 preferring another alternative such as consulting a specialist or simply talking to a close friend. Besides, data show that 23 among the 50 participants hold positive views, which corresponds to 46% of the total sample. Many informants, with different ages and educational levels believe that the Moroccan community have long suffered from the lack of media alternatives that enable them to express themselves freely and with no constraints. Now with the rise of programs of the like, listeners can maximize their life experiences and share their knowledge about many issues no matter how embarrassing they might be.

Sample category	Number of participants	Favorable perception	Disavowable perception
Direct contact sample	25	07	18
Facebook Sample	25	16	09

Table 1: Respondents' perceptions of confession programs

The positions of the professionals are likewise divergent. In his account for the performance of the Moroccan private stations, Mr. Mohamed Equal, the director of the Collége Académique Multimédia (CAM), holds that "most stations present almost the same content with few exceptions though. In the evenings for instance, which represent the second radiophonic primetime, programs are mainly oriented to what is purely psychological; listeners have the opportunity to call on the phone to tell their personal stories asking for the other listeners' help or for no declared reasons. These programs, continues Mr. Bekali, are involved in a merciless competition among different radio stations in quest of the highest audience rates.

This factor might sometime lead to the presentation of stories qualified as offensive, pervasive, tabooed and sometime phoney; the purpose is to keep the listener tuned". Unlike Mr. Bekali, Mr. Innani, the program coordinator of MFM Radio Group, brings forth a different, rather supportive stand point, he believes that CPs offer an interactional atmosphere in which listeners feel at ease among themselves thus incarnating the spirit of the station that bespeaks the concerns of its listeners. In his article entitled: "Thus turn The Nightly confession programs of Private Radios to Audio Pornography", published by the "Al Akhbar" Website, Hassan Al Khadraoui qualified Confession Programs as mere and promiscuous pornography. This conclusion was developed on the basis of certain programs whose presenters were gratuitously indulging in highly offensive issues tarnishing the feelings of the Moroccan listeners. After the liberalization of the audiovisual sector, the Moroccan public was expecting a qualitative shift in the type of programs offered in a way that should cater for their multiple needs. Paradoxically enough, most stations have ended up being chief seekers of programs inspired from, not to say dictated by the public. Being equipped with no background enabling them to select the most appropriate for them and their children, Moroccan listeners have become the touchstone whereby program constellation is established. Despite the critiques stated earlier, the prevalence of confession programs remains noticeable. Stations' program constellation includes at least one Confession Program. Listeners have the opportunity to intervene, tell stories, react to other stories or get feedback from a professional expert or mere listeners. Importantly, these programs are purposely presented in the evening, the primetime of radio, which realizes the highest listening rate. Table 2 shows further details about the stations, program title, the presenter, the program schedule and the time allocated. In addition, programs can be changed in form, content or schedules depending on the stations' new program priorities.

Program title	The Presenter	Radio Station	Program Schedule	Time Interval
Bikalb Maftooh	Ismail Aroui	Radio Aswat	Monday/Friday	10PM/12PM
Mazal Manaasinsh	Nordin Karam	Radio Mars	Monday/Friday	11PM/01 AM
Bikoul Wodouh	Mamoun Moubarak Dribi & Sanaa Kilani	Med Radio	Monday/Thursday	6PM/8PM
Nwadah Lik	Shorok Gharib	Atlantic Radio	Mon/Fri	2PM/4PM
Hkili	Yahya Belahssan	Cap-Radio	Mon/Fri	10PM/12PM
Samir Allail	Moustapha Lharda	MFM Radio	Mon/Fri	2PM/3AM
Minka Wa Ilaika	Mohamed Amoura	Alidaa Alwatania	Sunday	6PM/7PM
Maa Rachid	Rachid El Iddrissi	Radio Aswat	Monday/Friday	9PM/11PM
Bissaraha, Ftah Kalbek	Adib Salaki	Radio Plus	Monday/Friday	10PM/12PM

Table 2: List of confession programs

5. THE RELIGIOUS ACCOUNT FOR CONFESSION:

According to the religious perspective, Confession can best be analyzed in the light of two basic readings: Confession of one's beliefs and confession of one's sins. The former implies the declaration of one's ideas, opinions and creeds aloof from all misconceptions, prejudices or stereotypes that are susceptible of tarnishing the image of the believer. The latter however refers to the state of estrangement from God that result from transgressing his commandments. This situation, added to the embarrassment it brings to the sinful, is usually attributed to fame, defamation and scorn. As far as participants are concerned, the findings show that the rejection of the reaction characterizing the directly interviewed sample has religious implications; the religious account does not provide room for listeners to tell stories taken as offensive and intimate. This prohibition finds its premises in a number of prophetic sayings; it also mainly emanates from the fact that these adventurous stories might provide bad examples for some inexperienced listeners to follow. As a result, many interviewees hold that listeners willing to tell their stories on air use pseudonyms, which enables them to conceal their identities, they find it easier and safer to express their support either as listeners or as alleged participants in certain radio programs.

6. THE PSYCHOLOGICAL BENEFITS OF CONFESSION:

The psychological approach associates confession with an act of acknowledgement of who we are and what we believe and what we have done. These components may consequently be conducive to one of the three outcomes: personal validation, self-flagellation or a plea for forgiveness. The act of confessing hence requires a state of awareness from the person undertaking the act; we cannot confess to something unless we are aware of it. Confession in this sense is the condition sine qua non of self-awareness, which has been highly emphasized by participants. Most participants agree upon the contribution of confession in enhancing and strengthening social solidarity and compactness. Nevertheless, it entails a psychological cost and braveness as it makes the individual more vulnerable to any idea or opinion susceptible of giving him/her help.

7. THE SOCIOLOGICAL IMPLICATIONS OF CONFESSION.

Confession programs, despite their divergent professional and analytical levels, unravel some deep changes that occur in the Moroccan social tissue beside discarding the silence language and bringing in the confession alternative instead. Dr. Abderrahim Al Atri, professor of sociology at the university Mohamed Ibn Abdillah in Fes declared that confession programs can be placed in a general context which aims at increasing the audience rate of media institutions. The media needs of the Moroccan citizen are in constant change and find refuge in confession programs. Dr. Al Atri, in an interview published by the CNN website, declared that the Moroccan citizen has long suffered from the traditional and classical image of politicians speaking an alien language far from his chief and urgent concerns. These new programs however meet the needs of the layman who has now the precious chance of entering its studios and divulging what deeply lurks inside one's heart. By the same token, continues Dr. Al Atri, these programs contribute in appeasing the individuals' agonies by presenting more miserable and tragic cases related to incurable diseases and handicaps. As a result, people may be more predisposed to put up with their inextricable situations as they take themselves luckier in comparison with the cases presented on air. The noticeable rise of CPs, alongside with the deep moral change undertaken by the Moroccan society articulate a close attachment bringing together the Moroccan media and the public. In many conflictual cases, CPs were highly decisive in peace building and conflict resolution; in this, they may be construed as having useful, rather providential impacts on the Moroccan audience.

The wide proliferation of confession programs, as representative of reality programs, is also strengthened by the audience rejection of the boring and futile nature of political programs for example which do not echo an authentic reality; these programs are mostly criticized for using language beyond the layman reach. The widespread successful program: "Kissat Annass" broadcast by Médi 1 TV 8 years ago, with the popular ravage created by some of its editions manifests an urgent need of such services to fill certain gaps in our society. Simple people have at least the opportunity to share their experiences and agonies thus benefiting from programs becoming the refuge for those who have no refuge. In her declaration to the CNN website, Nouhad Bagdad, the presenter of "Kissat Annass", stated that "these programs do by no means seek to defame and interfere in the intimacy of the Moroccan families; they rather aim at shedding the light on issues that have long been placed in the dark recesses of the collective unconscious of the Moroccan society. The study has shown that these programs are highly useful at two levels: the first is primarily psychological as CPs enables the caller to get delivered and supported by the other listeners let alone their contribution to solve the problem at stake. The second utility is purely mercantile; thanks to their capacity to obtain the highest audience rate, CPs enable TV channels and radio stations to realize the highest lucrative gains mainly imbibe from the sponsorship tap.

8. CONCLUSION

This study was devoted to the investigation of the image and utility of confession programs for the Moroccan Public. It presented the psychological backbones and outcomes of confession regarding the personal development and equilibrium of the individual or listener. We also tackled the confession behaviour from a sociological perspective which revealed that confession is not a mere act of acknowledging one's experiences or sins; it is a ritual that noticeably contributed in strengthening social solidarity and compactness among people. As held by Dr. Abderrahim Elaterid, confession programs manifest a deep social need for collective therapies to appease social agonies. The study also revealed the commercial dimension of the CPs trend. Thanks to their capacity to obtain the highest audience rate, CPs enable TV channels and radio stations to realize the considerable financial incomes imbibe from the publicity tap. The study confirmed that confession programs can by no means be taken as an arbitrary phenomenon; rather, it has become an increasing trend that, as demoed in this paper, entails more deepened academic scrutiny. The choice of confession programs was but a specimen among other rising media issues that are no less worth studying and which therefore necessitate due academic accounts. Bearing in mind the proliferation of the social issues discussed above, the contribution of local media via such programs as CPs is likely to be a growing trend. What is needed is qualified academic institutions that can supervise research that investigate the impact of media on peace building situations. The study introduced in the present article suggests to bring an impetus to further academic inquiries. These studies should shed light not only on the public perceptions and/or attitudes toward particular issues; the focus should also be laid on the extent to which media can be an integral part of conflict resolution.

LITERATURE:
1. Williams P. Thomas J. (2005). Total Life Coaching, 50 Life Lessons, Skills, and Techniques to Enhance Your Practice-- and Your Life. Norton.
2. Giada, J. Holguin L. (2003). The Media's Role in Peace-Building: Asset or Liability? Barranquilla, Colombia
3. Hardon J. A. (1998) The Spiritual and Psychological Value of Frequent Confession. Inter Mirifica
4. S. M. Kissin (2015) The Social Psychology of False Confessions. The Society for the Psychological Study of Social Issues and Policy Review. V: 9, Issue 1, pages 25–51,

5. Levin J. S. Ellison C. G. Chatters L. M. (1998) The Religion Health Connection. Health Education & Behavior, Vol. 25 (6): 700-720 (Stefanone M. A. et al. (2010) The Relationship between Traditional Mass Media and ''social media'': Reality Television as a Model for Social Network Site Behavior. Retrieved September the 30th 2017 from https://fr.scribd.com/document.

6. Alkhadraoui H. (2010) Thus Turned the Nightly Programs of Private Radio Station to Audio Pornography. Retrieved September the 30th 2017 from http://www.alakhbar.press.ma

7. Alhouthi N. (2014) The Private Radio Stations in Morocco. Retrieved on September the 30th 2017 from https://www.alaraby.co.uk

8. CNN (2014) The Rise of Confession Programs, Revelation or Defamation? Retrieved on September the 30th from https://arabic.cnn.com/middleeast/2014.

9. Starkey G. (2008) A Short History of Radio Journalism, The Importance of Radio. SAGE Publications Ltd.: 1

BIBLIOMETRIC RESEARCH ON DEVELOPMENTS AND TRENDS ON THE MARKET OF TRADITIONAL FOOD PRODUCTS

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ABSTRACT

Traditional food products are a component of the agri-food system that covers all aspects of the food production chain from land/sea to table, from raw materials handling, storage and transport through processing, control, distribution and marketing for consumption. The main objective of this study is to carry out a bibliometric study of traditional products. The research of the database of WOS indexed articles, related to the market of traditional products was done for ten years (2012 – 2022) on the trends regarding the concept of traditional product. In recent years, there has been a growing interest in the ethical, health, environmental and cultural implications of food production and consumption. This study offers the opportunity to identify the evolution of research, major trends and issues in the field of traditional food market.
Keywords: *bibliometric study, traditional food, VOSviewer*

1. INTRODUCTION

Scientific research works in this field are usually conducted on academically broad topics that involve many fields of research. Traditional food research thus includes knowledge about products (natural sciences/technology), people (humanities, health sciences) and social context (social sciences). In general, it is characteristic that research moves increasingly across disciplinary boundaries and along the production chain from land/sea to table (Rahmat *et al.*, 2019; Ferreira, Marcovitch and Val, 2020; Wang *et al.*, 2020; Baiano, 2021; Kang *et al.*, 2022). For example, the environmental debate has meant a much greater research focus on the environmental aspects of food production. In addition, the food safety crisis of the 1990s created insecurity among European consumers, and against this background EU and national programs allocated large resources to create greater food security. Likewise, there have been and in recent years there has been extensive research into the health consequences of food, including lifestyle diseases (Philippidis *et al.*, 2019; Hadi and Brightwell, 2021; Bimpizas-Pinis *et al.*, 2022; Simmance *et al.*, 2022). In developed countries, the main trend of food consumption is homogenization both at the territorial and social level. This refers only to the categories with high food consumption, as the consumer shows an increasingly differentiated demand in some cases, based on even contradictory consumption criteria, for traditional food products. The purpose of this paper is to research the main trends and modes of consumption, to study the structure and dynamics of consumption for traditional Romanian food products, the profile of the typical consumer and the main trends emerging in the medium term (Kearney, 2010;

Notarnicola *et al.*, 2017; Hansmann, Baur and Binder, 2020; Chenarides *et al.*, 2021; Hirvonen, de Brauw and Abate, 2021; Mertens, Colizzi and Peñalvo, 2022).

The research of the concepts addressed within the agri-food system thus contains most research from primary production as well as food, research and therefore covers research in:

- agriculture and plants
- animals (including breeding and slaughtering)
- fisheries and aquaculture
- processing (including packaging and storage)
- distribution, trade and consumption
- research along the chain from primary production to the final consumer.

In recent years, the vision of agriculture has been rural development, but at the same time the activities classified as services (agritourism, environmental activities, logistic or educational activities) are becoming more and more important compared to the production of goods, as well as the components intangibles (knowledge, reputation, relationships) become the key to the competitiveness of the farm as well as the rural area. The concept of rural as a resource is a development model, which as such requires different values, a different composition of resources and predominant activities, different objects. These changes are counterpointed by changes in society, now firmly anchored in a post-industrial model. If we refer to the food sector by thinking, it is now widespread, for example, the awareness that the grace that entrusted most nutritional choices socializes individuals in a market

- governed system
- in the absence of adequate counterweights
- has led to perverse results, such as be the increasing rate of obesity in the population and the increase in the incidence of food-related diseases (Vuruşkan and Fröhlich, 2012; Bakirci, 2015; Johansson and Andreasson, 2016; Romão, Machino and Nijkamp, 2017; Bodor *et al.*, 2018).

Faced with growing insecurity, one of the answers is the search for simpler, more authentic, more natural lifestyles. And typical food products but they also fit fully into this trend. Contrary to appearances, they do not mean to create a defensive closure regarding the globalization of consumption and production. I am also an advanced response to consumers' growing search for variety, simplicity and authenticity, they find their own competitive advantage in the difficulties of the industrial system to give a consistent response to this research. Thus, the concepts identified with the help of bibliometric research are often not only strictly related to aspects of product improvement, but also the repercussions on the local production system and in general on the territory of origin of the product, regarding the identity of the population and the local culture, sometimes on the agro-ecosystems of whose expression is the traditional product.

2. METHODOLOGY

The concept of traditional food products is currently a component part of many national and international research programs. Moreover, the scientific literature is abundant on this subject and the concepts used (definition, classification typology, conceptual framework, quantification methods) are difficult to identify. The method used in this research is descriptive bibliometric analysis. Bibliometric indicators are increasingly applied by governments and various funding organizations, particularly due to their wide-scale applicability, low cost and time, and objectivity. The purpose of using these indicators is to optimize research allocations and make funding more efficient and effective. Furthermore, such bibliometric analyzes are necessary to understand the country's position in relation to global and domestic standards of scientific quality and production.

From this point of view, it is clear why such an analysis is carried out not only in economically developed countries, but also in many developing countries, as well as in countries with economies in transition. Indeed, government funding of research in countries with social, economic or political challenges and limited amount of available resources should be very efficient, which cannot be achieved without correct bibliometric analyses. Currently, the Scopus database is used for extensive bibliometric analyses, which is positioned by the Elsevier company as the largest universal bibliographic database with the ability to track scientific citations of publications. Although, WoS has some advantages compared to Scopus, such as depth of coverage, WoS database includes publications from 1945 and Scopus includes publications from 1966, both databases complement each other as no resource is exclusive and exhaustive. Bibliometric analysis includes concepts that researchers use to describe their research, index terms or classification codes. The bibliometric analysis technique is based on a grouping that determines the connection between publications based on direct citation relationships. With the VOSviewer software we use direct citation relationships, bibliographic coupling or co-citation relationships. After the relationship between the publications is determined, the publications are assigned to the clusters. Thus, each publication is assigned to exactly one cluster. The grouping of publications into clusters is achieved by maximizing a quality function:

$$Q(x_1,...,x_n) = \sum_{i=1}^{n} \sum_{j=1}^{n} \delta(x_i, x_j)\left(a_{ij} - \frac{\gamma}{2n} \right)$$

Where:
- n represent the number of publications,
- -a_{ij} represents the relationship between publication and and publication j,
- -γ represents the resolution parameter, -xi the activity cluster company is assigned publication i,
- the function $\delta(x_i, x_j)$ is a traffic light function, equal to 1 if $x_i = x_j$ and 0 otherwise.

The relation a_{ij}, between publication i and publication j is given by the following expression:

$$a_{ij} = \frac{c_{ij}}{\sum_{k=1}^{n} c_{ik}}$$

Where:
- c_{ij} has the value 1 if a publication i cites another publication j, and if we have the reverse situation where publication j cites publication i, the value of the cij parameter is 0 (Santos *et al.*, 2020; Shi *et al.*, 2020; Soliman *et al.*, 2021; Castañeda *et al.*, 2022; İNCE, 2022; Núñez-Merino *et al.*, 2022).

3. RESULTS AND DISCUSIONS
Using the presented methodology, with the help of the VOSviewer software, the specialized literature indexed in the Web of Science database was used to identify and visualize the evolution of the main trends.

Thus, 2882 WOS articles from the period 2014 - 2023 were selected based on three main criteria which are:

- Topics regarding "the market of traditional food products",
- Document type "article"
- Year of publication in the period 2014-2023.

There are eight major keyword clusters related to the traditional products market database in the most recently accessed WOS articles from 2014 to 2023, which we determined based on thematic clusters. Figure 1 shows the keyword co-occurrence relationship map and also describes the dominant links between keywords and groups.

Figure 1: Keyword co-occurrence relationship map

No single database could cover all related articles and the best form of bibliometric analysis is to use multiple databases for the search process. The bibliometric analysis of traditional food market studies established the most popular concepts as well as their evolution over time (figure 1). The USA, China, Italy, India, Spain, Poland and Brazil had the biggest contributions to the research and development of scientific concepts according to the bibliometric analysis regarding the market of traditional food products (figure 2).

Figure following on the next page

Figure 2: The countries with the greatest contribution to the development of concepts related to the market of traditional food products

VOSviewer is a tool that combines different types of interactive visualizations to support users in exploring the scientific literature. A publication clustering technique based on direct citation relationships, similar to the technique used in this paper, will be at the heart of the new tool. In this paper, using Vosviewer, we obtained a series of clusters with different levels of detail to understand the evolution of the scientific concepts encountered regarding the market of traditional Romanian food products. The dynamics of these clusters in the analysis carried out over the last 10 years reveals how interest in a subject has increased or decreased over time. Regarding traditional Romanian food products that reinvent food products and techniques from the past decades, an association with a series of very current scientific concepts can be observed in the current period.

4. CONCLUSION
Using VOSviewer as a bibliometric analysis tool, selected publications in the field of traditional food market can be clustered without the need for deep knowledge of clustering techniques. In addition, no advanced knowledge of information technology is required. The data set downloaded from the Web of Science online database can be provided directly as input to software tools without the need for data preprocessing. Of course, despite the ease of use of our tools, a basic understanding of clustering techniques remains essential to perform meaningful analysis and avoid misinterpretation of the results obtained.

LITERATURE:
1. Baiano, A. (2021) 'An overview on sustainability in the wine production chain', *Beverages*. Available at: https://doi.org/10.3390/BEVERAGES7010015.
2. Bakirci, M. (2015) 'Sustainable development of rural tourism within the periphery of metropolitan areas: The Polonez Village (Istanbul, Turkey)', *Carpathian Journal of Earth and Environmental Sciences*, 10(3).

3. Bimpizas-Pinis, M. *et al.* (2022) 'Additives in the food supply chain: Environmental assessment and circular economy implications', *Environmental and Sustainability Indicators*, 14. Available at: https://doi.org/10.1016/j.indic.2022.100172.
4. Bodor, Z. *et al.* (2018) 'Application of near infrared spectroscopy and classical analytical methods for the evaluation of hungarian honey', *Progress in Agricultural Engineering Sciences*, 14. Available at: https://doi.org/10.1556/446.14.2018.S1.2.
5. Castañeda, K. *et al.* (2022) 'Highway Planning Trends: A Bibliometric Analysis', *Sustainability (Switzerland)*. Available at: https://doi.org/10.3390/su14095544.
6. Chenarides, L. *et al.* (2021) 'Food consumption behavior during the COVID-19 pandemic', *Agribusiness*, 37(1). Available at: https://doi.org/10.1002/agr.21679.
7. Ferreira, G., Marcovitch, J. and Val, A.L. (2020) 'A systematic review of the production chain of the Arapaima gigas, the giant fish of the Amazon', *Management of Environmental Quality: An International Journal*. Available at: https://doi.org/10.1108/MEQ-11-2019-0238.
8. Hadi, J. and Brightwell, G. (2021) 'Safety of alternative proteins: Technological, environmental and regulatory aspects of cultured meat, plant-based meat, insect protein and single-cell protein', *Foods*, 10(6). Available at: https://doi.org/10.3390/foods10061226.
9. Hansmann, R., Baur, I. and Binder, C.R. (2020) 'Increasing organic food consumption: An integrating model of drivers and barriers', *Journal of Cleaner Production*, 275. Available at: https://doi.org/10.1016/j.jclepro.2020.123058.
10. Hirvonen, K., de Brauw, A. and Abate, G.T. (2021) 'Food Consumption and Food Security during the COVID-19 Pandemic in Addis Ababa', *American Journal of Agricultural Economics*, 103(3). Available at: https://doi.org/10.1111/ajae.12206.
11. İNCE, B. (2022) 'Investigation of International Literature on Bilingual and Multilingual Turkish Children by Bibliometric Analysis Technique', *Sakarya University Journal of Education* [Preprint]. Available at: https://doi.org/10.19126/suje.1082446.
12. Johansson, T. and Andreasson, J. (2016) 'The Gym and the Beach: Globalization, Situated Bodies, and Australian Fitness', *Journal of Contemporary Ethnography*, 45(2). Available at: https://doi.org/10.1177/0891241614554086.
13. Kang, X. *et al.* (2022) 'Prevalence and whole-genome sequencing analysis of Salmonella reveal its spread along the duck production chain', *Poultry Science*, 101(9). Available at: https://doi.org/10.1016/j.psj.2022.101993.
14. Kearney, J. (2010) 'Food consumption trends and drivers', *Philosophical Transactions of the Royal Society B: Biological Sciences*. Available at: https://doi.org/10.1098/rstb.2010.0149.
15. Mertens, E., Colizzi, C. and Peñalvo, J.L. (2022) 'Ultra-processed food consumption in adults across Europe', *European Journal of Nutrition*, 61(3). Available at: https://doi.org/10.1007/s00394-021-02733-7.
16. Notarnicola, B. *et al.* (2017) 'Environmental impacts of food consumption in Europe', *Journal of Cleaner Production*, 140. Available at: https://doi.org/10.1016/j.jclepro.2016.06.080.
17. Núñez-Merino, M. *et al.* (2022) 'Industry 4.0 and supply chain. A Systematic Science Mapping analysis', *Technological Forecasting and Social Change*, 181. Available at: https://doi.org/10.1016/j.techfore.2022.121788.
18. Philippidis, G. *et al.* (2019) 'Waste not, want not: A bio-economic impact assessment of household food waste reductions in the EU', *Resources, Conservation and Recycling*, 146. Available at: https://doi.org/10.1016/j.resconrec.2019.04.016.
19. Rahmat, S.R. *et al.* (2019) 'Leading key players and support system in Malaysian paddy production chain', *Cogent Food and Agriculture*, 5(1). Available at: https://doi.org/10.1080/23311932.2019.1708682.

20. Romão, J., Machino, K. and Nijkamp, P. (2017) 'Assessment of wellness tourism development in Hokkaido: a multicriteria and strategic choice analysis', *Asia-Pacific Journal of Regional Science*, 1(1). Available at: https://doi.org/10.1007/s41685-017-0042-4.

21. Santos, L.L. *et al.* (2020) 'Sustainability perceptions in tourism and hospitality: A mixed-method bibliometric approach', *Sustainability (Switzerland)*, 12(21). Available at: https://doi.org/10.3390/su12218852.

22. Shi, Y. *et al.* (2020) 'A literature review on accessibility using bibliometric analysis techniques', *Journal of Transport Geography*. Available at: https://doi.org/10.1016/j.jtrangeo.2020.102810.

23. Simmance, F.A. *et al.* (2022) 'Nudging fisheries and aquaculture research towards food systems', *Fish and Fisheries*, 23(1). Available at: https://doi.org/10.1111/faf.12597.

24. Soliman, M. *et al.* (2021) 'Mapping smart experiences in tourism: A bibliometric approach', *European Journal of Tourism Research*. Available at: https://doi.org/10.54055/ejtr.v28i.2254.

25. Vuruşkan, A. and Fröhlich, J. (2012) 'Alternative Marketing Strategies in Commercial Eco Fashion', *1st International Fashion and Textile Design Symposium, Department of Fashion and Textile Design, Faculty of Fine Arts, Akdeniz University* [Preprint], (October).

26. Wang, M. *et al.* (2020) 'Analyses of prevalence and molecular typing of Salmonella in the goose production chain', *Poultry Science*, 99(4). Available at: https://doi.org/10.1016/j.psj.2019.12.008.

BIBLIOMETRIC RESEARCH ON THE IMPACT OF PESTICIDE USE ON FOOD SAFETY

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ABSTRACT

The food safety represent the main objective of agricultural policy. Food security requires a quantitative, qualitative and social approach. The use of pesticides contributes to ensuring food security from a quantitative point of view, but negatively influences food security from a qualitative point of view. The main objective of this study is to carry out a bibliometric study of the impact of pesticides on food security. The data used in this analysis were obtained by querying the Web of Science database. In last years, there has been a growing interest regarding the impact of pesticides on food safety. This study offer opportunity to identify the evolution of research, major trends and issues in the field of the pesticides impact on the food safety.
Keywords: bibliometric study, food safety, pesticides, VOSviewer

1. INTRODUCTION

Plant protection products, which are pesticides used to protect agricultural crops, can play an important role in food production and storage. All chemicals authorized for use in food must first go through a rigorous risk assessment to ensure its safety. The possible effect of these chemicals on our health and safety depends on our level of exposure to them, for example through the food we eat or other sources of environmental exposure (Damalas and Eleftherohorinos, 2011; Alengebawy *et al.*, 2021; Kalyabina *et al.*, 2021). That is why regulatory bodies carry out rigorous risk assessments of all chemicals proposed for use in food, to determine which substances can be used and to what extent. In this way it is ensured that the use of chemicals in food and on crops (eg pesticides) does not have adverse effects on animal or human health eg on the environment. The verification of the presence of pesticide residues in food of animal origin is carried out both through community control plans applicable in all member states or through national plans established by natural persons. Community plans, generally for three years, provide for a yearly rotation of the matrices to be controlled, to cover during the three-year period in which they are active all types of food: milk, butter, eggs, meat

(muscle and liver), honey (Hassaan and El Nemr, 2020; Gunstone *et al.*, 2021; Tudi *et al.*, 2022). Plant protection products are pesticides used by farmers to protect their crops from pests and diseases. In the EU, sales of active substances used in plant protection products exceed 350,000 tonnes per year. Plant protection products can have an impact on water and soil quality, biodiversity and ecosystems and can be found as residues in food (Belyakov and Nikolina, 2021; Chen *et al.*, 2021; Hu *et al.*, 2022). These food residue values should be reviewed regularly with a view to lowering the maximum residue limits, taking into account the decrease in levels observed in more recent control programs. The European agency with skills in the field of food safety, EFSA, noted that some countries did not report the results in accordance with the provisions of European legislation, namely that the results, mostly part of food of animal origin, must be expressed on a fat basis . Due to the difficulties in comparing the reported results, EFSA could not draw valid conclusions and recommendations regarding the revision of the MRLs. To improve the situation, however, EFSA recommends that Member States provide clear guidance on how to report pesticide residue findings for food of animal origin (Sharma *et al.*, 2019; Syafrudin *et al.*, 2021; Tudi *et al.*, 2021; Ngegba *et al.*, 2022). The list of pathologies caused by the use of pesticides in agriculture is long and includes: Parkinson's disease, Alzheimer's, ALS, cardiovascular diseases, autoimmune and kidney diseases, diabetes, reproductive disorders, malformations and developmental defects, occupational asthma, chronic bronchitis and thyroid diseases. We can add celiac disease to this list. To all these pathologies we can add allergies, food intolerances, skin rashes, all caused by the chemicals used in crops. Unfortunately, these are revealed by the presence of organic derivatives used in agriculture and pesticides in the water we drink. So let's not be surprised if people keep getting sick. Living near places where pesticides are used, produced or disposed of increases your risk of exposure either through inhalation or through contact with water. The government should take care of this issue by trying to adopt some coercive measures in law enforcement. Protecting the health of the population should be one of the first issues to be addressed. Institutions should also rely on health experts and ensure that they are not corruptible by the companies that produce and sell these pesticides.

2. METHODOLOGY

A pesticide is a chemical compound used as a means of fighting against harmful animals (insects, mites, nematodes, rodents, etc.) and against fungal or weed infections. They are classified taking into account their use (insecticides, herbicides, fungicides, fungicides, acaricides, etc.) or their chemical structure. Some pesticides remain on the plant as a superficial deposit (and therefore removable by washing), most instead penetrate the tissues (so it becomes impossible to eliminate the toxicity by washing). These substances have a very different chemical composition between them, they are classified as: organophosphorus, organochlorine (derivatives of DDT), halogenated hydrocarbons (fumigants), vegetable (pyrethrum, nicotine), mineral oils (associated with the active ingredients). Chemical substances have the ability to eradicate parasites by acting in several ways:

- Contact pesticides: they only work if they come into direct contact with parasites;
- Insecticides active by ingestion act on the digestive system of insects that introduce them when they feed on the vegetables on which they are scattered;
- Systemic pesticides are primarily absorbed by the plants and then act on the parasites that feed on them.

Bibliometric analysis includes concepts that researchers use to describe their research, index terms or classification codes. The bibliometric analysis technique is based on a grouping that determines the connection between publications based on direct citation relationships.

With the VOSviewer software we use direct citation relationships, bibliographic coupling or co-citation relationships. After the relationship between the publications is determined, the publications are assigned to the clusters. Thus, each publication is assigned to exactly one cluster. The grouping of publications into clusters is achieved by maximizing a quality function:

$$Q(x_1, \ldots, x_n) = \sum_{i=1}^{n} \sum_{j=1}^{n} \delta(x_i, x_j) \left(a_{ij} - \frac{\gamma}{2n} \right)$$

Where:
- n represent the number of publications,
- a_{ij} represents the relationship between publication and and publication j,
- γ represents the resolution parameter, -xi the activity cluster company is assigned publication i,
- the function $\delta(x_i, x_j)$ is a traffic light function, equal to 1 if $x_i = x_j$ and 0 otherwise.
- The relation a_{ij}, between publication i and publication j is given by the following expression:

$$a_{ij} = \frac{c_{ij}}{\sum_{k=1}^{n} c_{ik}}$$

Where:
- c_{ij} has the value 1 if a publication i cites another publication j, and if we have the reverse situation where publication j cites publication i, the value of the cij parameter is 0 (Santos *et al.*, 2020; Shi *et al.*, 2020; Soliman *et al.*, 2021; Castañeda *et al.*, 2022; İNCE, 2022; Núñez-Merino *et al.*, 2022).

3. RESULTS AND DISCUSIONS
Using the presented methodology, with the help of the VOSviewer software, the specialized literature indexed in the Web of Science database was used to identify and visualize the evolution of the main trends. Thus, 580 WOS articles from the period 2014 - 2023 were selected based on three main criteria which are:
- Topics regarding "the impact of pesticide use on food safety",
- Document type "article"
- Year of publication in the period 2014-2023.

There are eight major keyword clusters related to the impact of pesticide use on food safety database in the most recently accessed WOS articles from 2014 to 2023, which we determined based on thematic clusters. Figure 1 shows the keyword co-occurrence relationship map and also describes the dominant links between keywords and groups.

Figure following on the next page
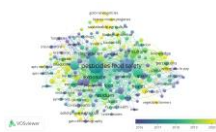
Figure 1: Keyword co-occurrence relationship map

No single database could cover all related articles and the best form of bibliometric analysis is to use multiple databases for the search process. The bibliometric analysis of traditional food market studies established the most popular concepts as well as their evolution over time (figure 1). The USA, China, Italy, India, Spain, Poland and Brazil had the biggest contributions to the research and development of scientific concepts according to the bibliometric analysis regarding the market of traditional food products (figure 2).

Figure 2: The countries with the greatest contribution to the development of concepts related to the market of traditional food products

VOSviewer is a tool that combines different types of interactive visualizations to support users in exploring the scientific literature. A publication clustering technique based on direct citation relationships, similar to the technique used in this paper, will be at the heart of the new tool. In this paper, using Vosviewer, we obtained a series of clusters with different levels of detail to understand the evolution of the scientific concepts encountered regarding the market of traditional Romanian food products. The dynamics of these clusters in the analysis carried out over the last 10 years reveals how interest in a subject has increased or decreased over time. Regarding traditional Romanian food products that reinvent food products and techniques from the past decades, an association with a series of very current scientific concepts can be observed in the current period. The use of these products can create environmental pressures and pose risks to groundwater and surface water quality, soil quality, biodiversity, ecosystems and human health, including through food residues. Plant protection products sprayed on fields can enter the soil and water in the vicinity of those areas. At EU level as a whole, sales of active substances contained in plant protection products have remained relatively stable in recent years. However, the volume of sales is not directly correlated with the risks and effects associated with the use of these products. The risks and effects of plant protection products vary not only according to the active substances they contain, but also according to their composition and where, when and how users apply them in practice. In Europe it is considered that the maximum level of pesticide residues in food should not exceed 0.01 mg/kg. However, the amount of pesticide residues in food can also reach higher levels, depending on certain factors such as: the type and amount of chemicals used, failure to observe the interval between application and harvest, natural factors (rainfall, wind, exposure to the sun), the processes food goes through, storage conditions [4]–[6]. An important distinction must be made between mild (non-persistent) pesticides. they are rapidly biodegradable compounds and heavy (persistent) pesticides. instead, they are compounds that remain in the environment for relatively long periods of time. Their persistence depends on many factors: the type of soil, the humidity, the Ph and the extent of the crops, edédeterminante to establish the safety interval, that is, the time that must pass between the last treatment and collection. By their very nature, pesticides can be dangerous to humans or other animals because their purpose is to kill or harm living organisms. They can be absorbed by inhalation, by contact with the skin or through the digestive system. The acute effects of pesticide poisoning are liver disorders, cancer, lung diseases, skin, blood. These substances can not only have negative effects on the exposed individual, but, acting on the germ cells themselves, determine the changes that are transmitted to successive generations, through epigenetic changes. The main harm to human health for exposure to these substances have been identified in: - Decrease in male fertility; - Spontaneous abortion; - Autoimmune disorders; - Increased risk of cryptorchidism; - Diabetes/certain forms of obesity; - Increased risk of tumors; - Cognitive deficiencies and behavioral disorders; - Hormonal dysfunctions (especially thyroid). Based on toxicity, 4 groups can be classified: - the first in which pesticides can cause death; - the second group in which they cause severe poisoning, - in the third group it causes mild intoxication, - in the fourth it causes negligible poisoning. Integrated pest management is a concept that emerged in the 1970s that emphasizes the prevention of pest infestation and uses sustainable agricultural practices such as crop rotation and the selection of pest-resistant seeds. This concept also includes monitoring pests and establishing reliable threshold values to allow a decision to be made as to whether and when to apply pest control measures. Compared to the systematic application of plant protection products, integrated pest management is a greener approach, combining "common sense" practices. It allows reducing dependence on plant protection products: if they apply this approach, farmers resort to chemical plant protection products only if necessary, after exhausting preventive, physical, biological or other non-chemical methods of pest control [7] -[9]. The maximum level of pesticide residues provides a standard by which it can be checked whether the food for which pesticides have been

used in the technological process are safe for human consumption. The simple fact that there are pesticide residues in food does not automatically mean that they are harmful to health. The maximum residue level accepted to be ingested every day, for life, is calculated by applying a safety factor of at least 100 times lower than the dose at which possible harmful effects of the active substance on health could be found. Thus, in order not to affect the health of humans and animals, through their excessive infiltration in food, pesticides must be used in agriculture in the quantities and in the combinations provided by international bodies. In Europe it is considered that the maximum level of pesticide residues in food should not exceed 0.01 mg/kg. However, the amount of pesticide residues in food can also reach higher levels, depending on certain factors such as: the type and amount of chemicals used, failure to observe the interval between application and harvest, natural factors (rainfall, wind, exposure to the sun), the processes food goes through, storage conditions [10]–[13]. The European Food Safety Authority (EFSA) presents an annual report examining the levels of pesticide residues in food on the European market. This report is based on data from official national control activities carried out by EU Member States, Iceland and Norway and includes a subset of data from the EU Coordinated Control Program (EUCP), which uses a random sampling strategy. Every year, the number of food samples analyzed for pesticide residues increases.

4. CONCLUSION

Using VOSviewer as a bibliometric analysis tool, selected publications in the field of the impact of pesticide use on food safety can be clustered without the need for deep knowledge of clustering techniques. In addition, no advanced knowledge of information technology is required. The data set downloaded from the Web of Science online database can be provided directly as input to software tools without the need for data preprocessing. Of course, despite the ease of use of our tools, a basic understanding of clustering techniques remains essential to perform meaningful analysis and avoid misinterpretation of the results obtained. The use of pesticides as a means of pest control must be achieved through an integrated management of plant diseases and pests such as: biological control, habitat manipulation, modification of cultural practices and the use of resistant varieties.

LITERATURE:

1. Alengebawy, A. *et al.* (2021) 'Heavy metals and pesticides toxicity in agricultural soil and plants: Ecological risks and human health implications', *Toxics*. Available at: https://doi.org/10.3390/toxics9030042.
2. Belyakov, N. V. and Nikolina, N. V. (2021) 'Plant protection technologies: From advanced to innovative', in *Journal of Physics: Conference Series*. Available at: https://doi.org/10.1088/1742-6596/1942/1/012072.
3. Castañeda, K. *et al.* (2022) 'Highway Planning Trends: A Bibliometric Analysis', *Sustainability (Switzerland)*. Available at: https://doi.org/10.3390/su14095544.
4. Chen, H. *et al.* (2021) 'Review of agricultural spraying technologies for plant protection using unmanned aerial vehicle (Uav)', *International Journal of Agricultural and Biological Engineering*, 14(1). Available at: https://doi.org/10.25165/j.ijabe.20211401.5714.
5. Damalas, C.A. and Eleftherohorinos, I.G. (2011) 'Pesticide exposure, safety issues, and risk assessment indicators', *International Journal of Environmental Research and Public Health*. Available at: https://doi.org/10.3390/ijerph8051402.
6. Gunstone, T. *et al.* (2021) 'Pesticides and Soil Invertebrates: A Hazard Assessment', *Frontiers in Environmental Science*. Available at: https://doi.org/10.3389/fenvs.2021.643847.

7. Hassaan, M.A. and El Nemr, A. (2020) 'Pesticides pollution: Classifications, human health impact, extraction and treatment techniques', *Egyptian Journal of Aquatic Research*. Available at: https://doi.org/10.1016/j.ejar.2020.08.007.
8. Hu, P. *et al.* (2022) 'Development Status and Key Technologies of Plant Protection UAVs in China: A Review', *Drones*. Available at: https://doi.org/10.3390/drones6110354.
9. İNCE, B. (2022) 'Investigation of International Literature on Bilingual and Multilingual Turkish Children by Bibliometric Analysis Technique', *Sakarya University Journal of Education* [Preprint]. Available at: https://doi.org/10.19126/suje.1082446.
10. Kalyabina, V.P. *et al.* (2021) 'Pesticides: formulants, distribution pathways and effects on human health – a review', *Toxicology Reports*. Available at: https://doi.org/10.1016/j.toxrep.2021.06.004.
11. Ngegba, P.M. *et al.* (2022) 'Use of Botanical Pesticides in Agriculture as an Alternative to Synthetic Pesticides', *Agriculture (Switzerland)*. Available at: https://doi.org/10.3390/agriculture12050600.
12. Núñez-Merino, M. *et al.* (2022) 'Industry 4.0 and supply chain. A Systematic Science Mapping analysis', *Technological Forecasting and Social Change*, 181. Available at: https://doi.org/10.1016/j.techfore.2022.121788.
13. Santos, L.L. *et al.* (2020) 'Sustainability perceptions in tourism and hospitality: A mixed-method bibliometric approach', *Sustainability (Switzerland)*, 12(21). Available at: https://doi.org/10.3390/su12218852.
14. Sharma, A. *et al.* (2019) 'Worldwide pesticide usage and its impacts on ecosystem', *SN Applied Sciences*. Available at: https://doi.org/10.1007/s42452-019-1485-1.
15. Shi, Y. *et al.* (2020) 'A literature review on accessibility using bibliometric analysis techniques', *Journal of Transport Geography*. Available at: https://doi.org/10.1016/j.jtrangeo.2020.102810.
16. Soliman, M. *et al.* (2021) 'Mapping smart experiences in tourism: A bibliometric approach', *European Journal of Tourism Research*. Available at: https://doi.org/10.54055/ejtr.v28i.2254.
17. Syafrudin, M. *et al.* (2021) 'Pesticides in drinking water-a review', *International Journal of Environmental Research and Public Health*. Available at: https://doi.org/10.3390/ijerph18020468.
18. Tudi, M. *et al.* (2021) 'Agriculture development, pesticide application and its impact on the environment', *International Journal of Environmental Research and Public Health*. Available at: https://doi.org/10.3390/ijerph18031112.
19. Tudi, M. *et al.* (2022) 'Exposure Routes and Health Risks Associated with Pesticide Application', *Toxics*. Available at: https://doi.org/10.3390/toxics10060335.

FARM PERFORMANCE THROUGH DIGITIZATION IN ROMANIA

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ABSTRACT
Smart and modern agriculture makes a substantial contribution to the progress of today's economy, and Romania's agricultural potential has a major influence on the management of these rich resources. By introducing new technologies required by digitization, digital agriculture will ensure a shift towards efficiency, productivity, and sustainability at the farm level and across the sector. In view of these aspects, this research aims to investigate the phenomenon of digitization of agriculture in terms of the need for its implementation, opportunities, benefits, and implications for the Romanian economy. With this in mind, a 2020 survey of farmers in Romania's SE region on digitization in agriculture was analyzed and the majority of respondents agreed that the use of smart farming can help them increase productivity and that crop production needs smart farming technologies.
Keywords: *digital transformation, smart agriculture, digitization, digital tools, IoT*

1. INTRODUCTION
From artificial intelligence (AI) and robotics to the Internet of Things (IoT) and 5G, the latest technologies can provide invaluable support for farmers and agricultural businesses. Through digitization, stakeholders can benefit from a more streamlined value chain with closer collaboration and improved communication between producers, processors, distributors, and retailers. Digitization in agriculture is seen as a new concept, covering a number of its links, namely: software to manage farming activities and monitor crops, their vegetation, the evolution of weeds, diseases, and pests, and soil mineral requirements according to crop condition. According to some, this is more of an evolution of the concept of precision farming, which is a starting point for intelligent agriculture [1]. Thus, research and innovation can be the main tool to achieve a smarter and more sustainable system in agriculture. The fact that the world's population is constantly growing, requiring a demand for healthy and optimally produced food, makes food one of the greatest challenges facing humanity, a solution that can only be achieved through technological innovation and agricultural technologies, which will have great potential in making agriculture more productive and sustainable. Agriculture's entry into the digital age is due to the ever-increasing demand for agricultural products [2].

2. APPROACHES TO THE NEED FOR DIGITIZATION OF AGRICULTURE
Today, the digitization of agriculture is driven by the need to increase food supply to cope with a growing world population, especially with the substantial reduction of agricultural land due to urbanization and industrial growth, increased profitability of farming activities, reduction of costs and increasing risks due to extreme weather conditions, compliance with legal regulations on pollution reduction, environmental conservation and the ongoing fight against climate

change and desertification. Digitization solutions in the coming years will take the form of: generalization of self-guidance, control of applied doses, application of variable doses and section control, optimization of automatic adjustments, development of autonomous and robotized machines, widespread use of satellite or drone photography, extensive use of plant health sensors, crop, and soil quality sensors, creation and use of multi-layer maps overlaying information of different types, data transfer, selection and analysis, creation of multidisciplinary software, public data platforms, training of operators and farmers to make the most correct and optimal decisions [3]. At the same time, digitization is the link that contributes to the development of efficient agriculture, which will increase farm performance, reduce consumption and costs, protect the soil, increase profits and protect the environment. This phenomenon of digitisation makes much of the work done without human intervention, integrating a range of information obtained by sensors, making it possible to communicate between the tractor and the farm machinery, but the most important decisions are still made by the farmer. All these aspects are strictly linked through the other links of precision farming and are complementary, as digitization without intelligent machines capable of applying variable doses or ensuring a particular quality of agricultural work makes no sense in this evolution[4].

3. THE SITUATION OF ROMANIAN AGRICULTURE IN THE CURRENT MOMENT OF DIGITIZATION

In a survey conducted by a digital agriculture company, it is shown that for 75% of Romanian farmers, the mobile phone is an indispensable tool every day, but only 17% of farmers use software to manage their farm. Also, 49.5% of Romanian farmers use an agenda as their main tool to keep track of land and farm work, 20% use Excel programs, 13.5% say they do not consider they need such tools, while only 17% use a dedicated software or application to manage their farm, which is very little compared to other European countries such as Germany or France. As Romanian agriculture exceeded 40 billion lei at the end of 2019, the sector can become more competitive if investments in technology and digitalization increase. Also, by valorizing raw materials, when farmers understand that associating in cooperatives or entering into partnerships with processors and joint investments are the main key to making finished products [5]. At the same time, increasing food production in Romania can be achieved through large retail chains, which guarantee access to Romanian products on the market.

4. STATISTICAL DATA
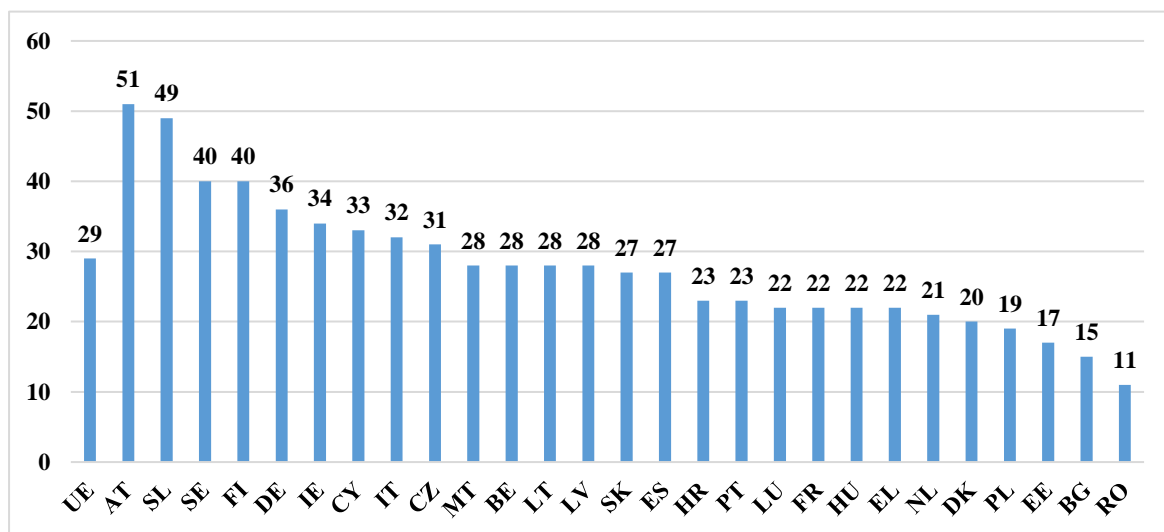
Figure 1: Enterprises using IoT in 2021(%) - ec.europa.eu/EUROSTAT [6]

In 2021, 29% of EU businesses will have used interconnected devices or systems that can be remotely monitored or controlled via the Internet (IoT). As far as can be seen, only 11% of these devices are used in Romania. For Romania to increase the value of its agricultural production, it would need to mechanize a large part of the agricultural field. This is difficult to achieve because of the (extremely fragmented) ownership in Romania, where the average farm size is about 3.7 hectares. More than 50% of Romanian farmers work on farms of less than one hectare. In Romania, at least half of all farm workers practice subsistence farming. That's a million people cut off from modernity, along with their families. Fortunately, tractor assembly factories are making a comeback in Romania, and in 2020 TAGRO, the first 100% Romanian tractor produced at IRUM Reșița, was launched. This tractor is primarily aimed at small and medium-sized farms and will be sold both domestically and abroad. TAGRO will have all the necessary equipment for a modern tractor, including radio control and air conditioning. Before its launch, the tractor was tested in Romania and Italy, and by the end of this year, the approval process by the Romanian Motor Registry will be completed. If the government devises a strategy to support farmers to buy such tractors, we will see spectacular increases in production, doubling it in less than a decade. However, this may not be enough for a proper mechanization strategy for agriculture. Let's take the example of Romania's SE region. For the investigation related to the level of readiness for Smart farming in the mentioned region, a survey was developed in 2020. The results of the investigation, related to the level of awareness about smart technologies and IoT, are presented below.
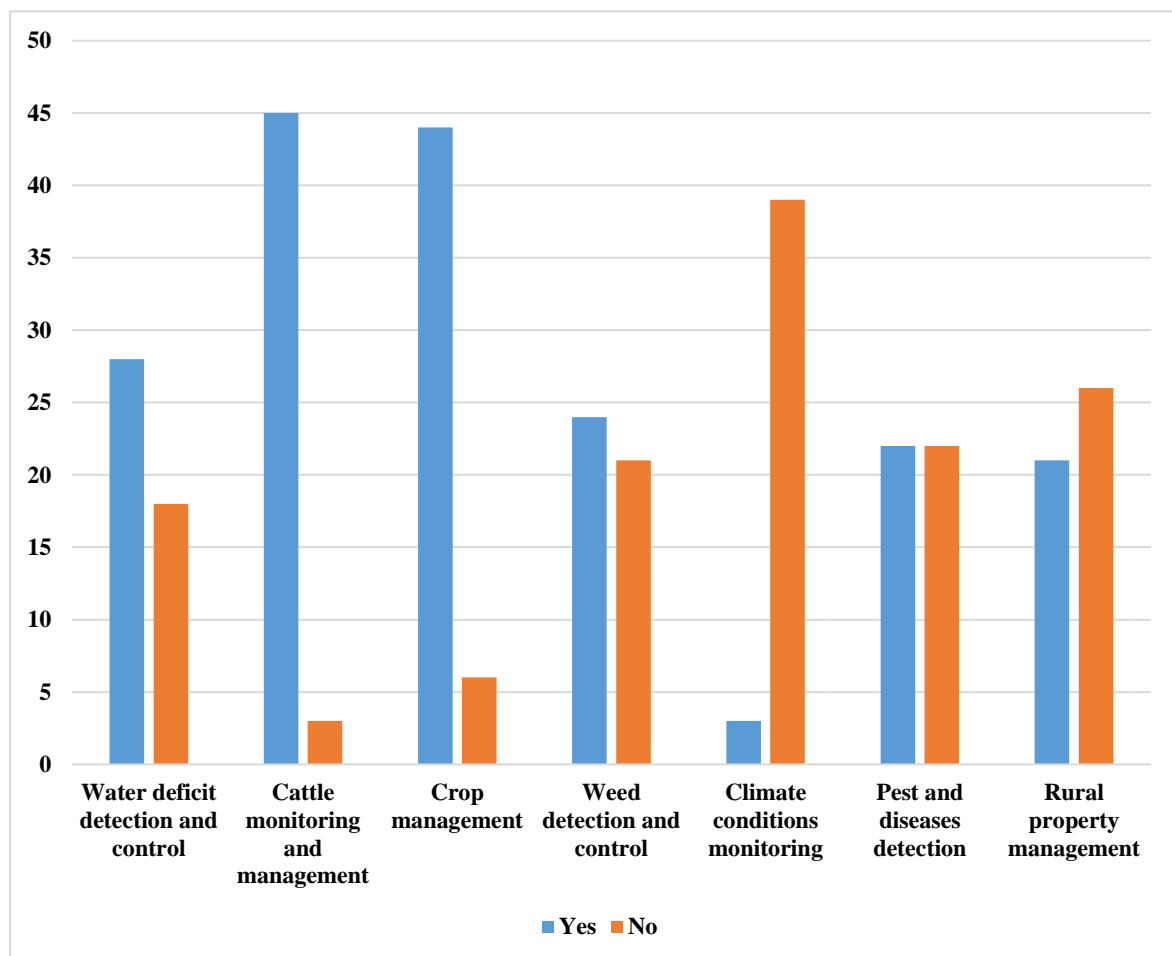
Figure 2: Stakeholder awareness of smart farming applications in the SE region of Romania - blacksea-cbc.net [7]
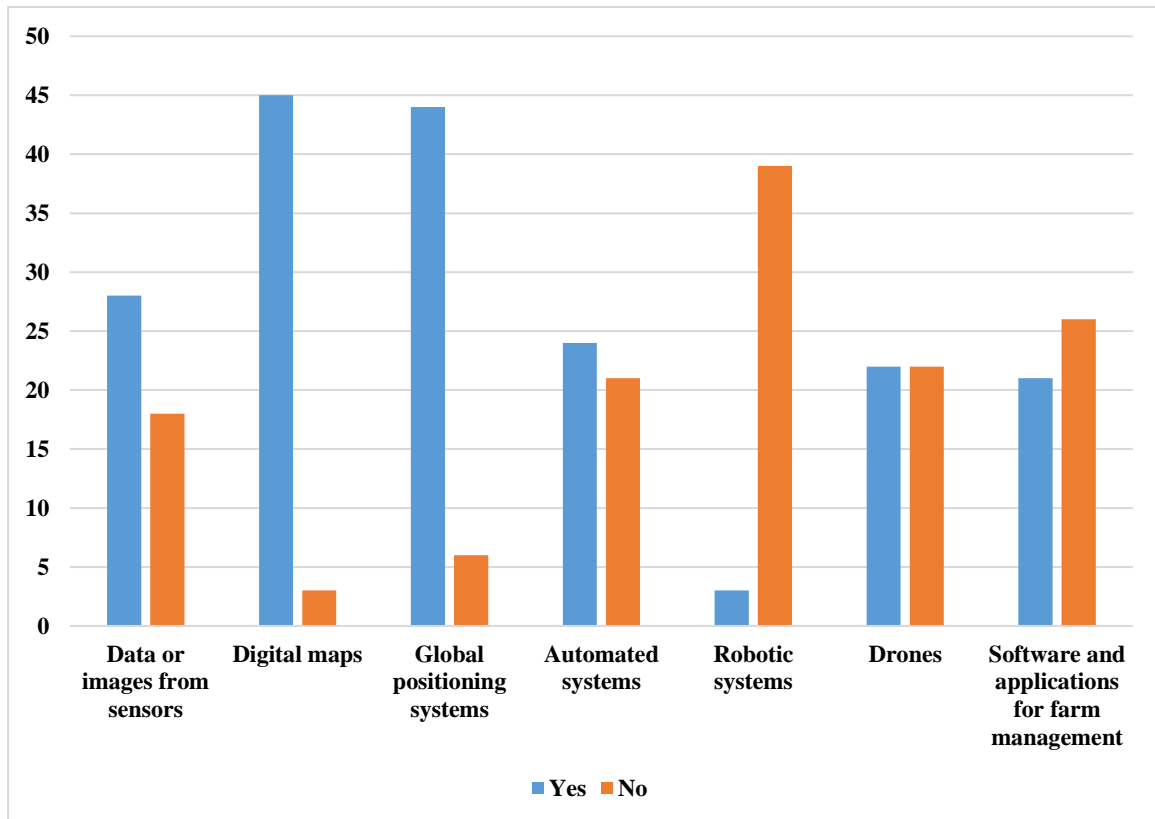
Figure 3: Stakeholder awareness of smart agricultural technologies in the SE region of Romania - blacksea-cbc.net [7]
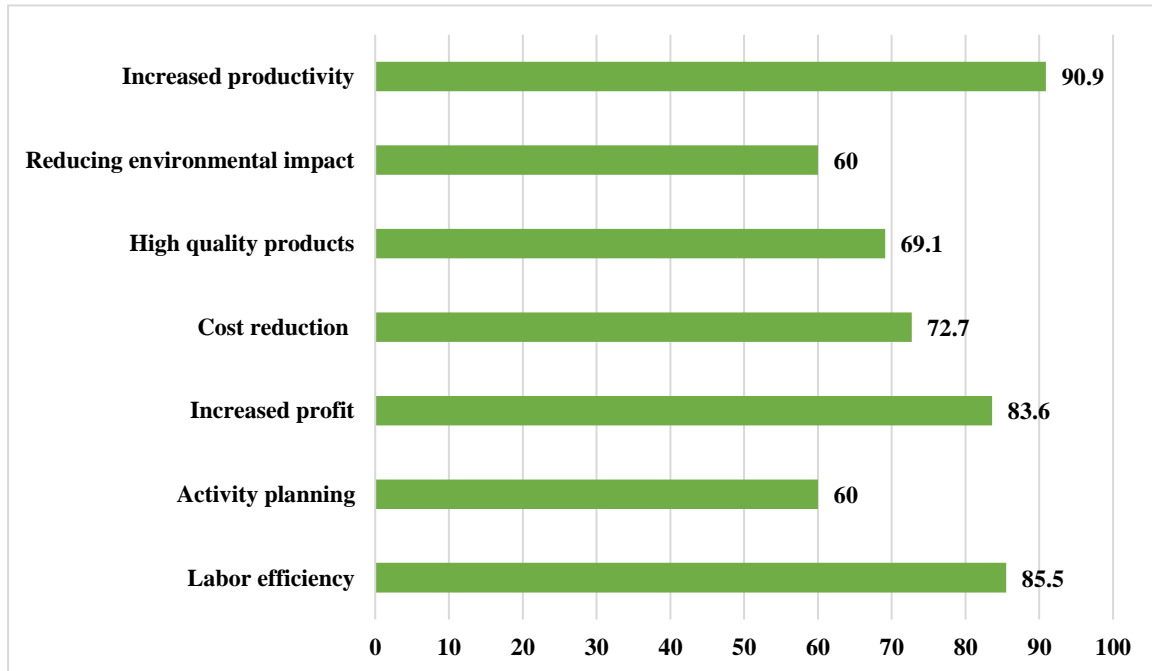
Figure 4: Stakeholder opinion on the benefits of using smart agriculture in the SE Region of Romania (%) - blacksea-cbc.net [7]

As far as can be seen, the majority of the participants in the survey said that the use of smart farming can help them increase productivity, with the next highest rankings, by a narrow margin, being increased labour efficiency and increased profit.
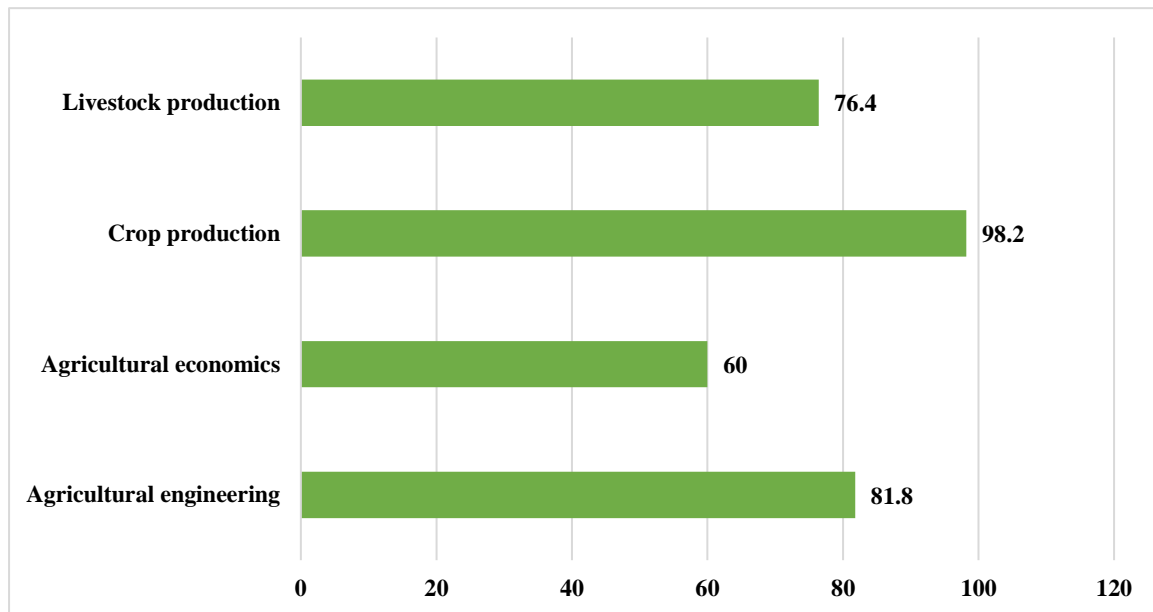
Figure 5: Stakeholders' opinion on areas of agriculture in need of smart farming technologies (%) - blacksea-cbc.net [7]

98.2% of stakeholders considered that crop production needs smart agricultural technologies, 81.8% in agricultural engineering, 76.4% in animal husbandry, and 60% in agricultural economics.
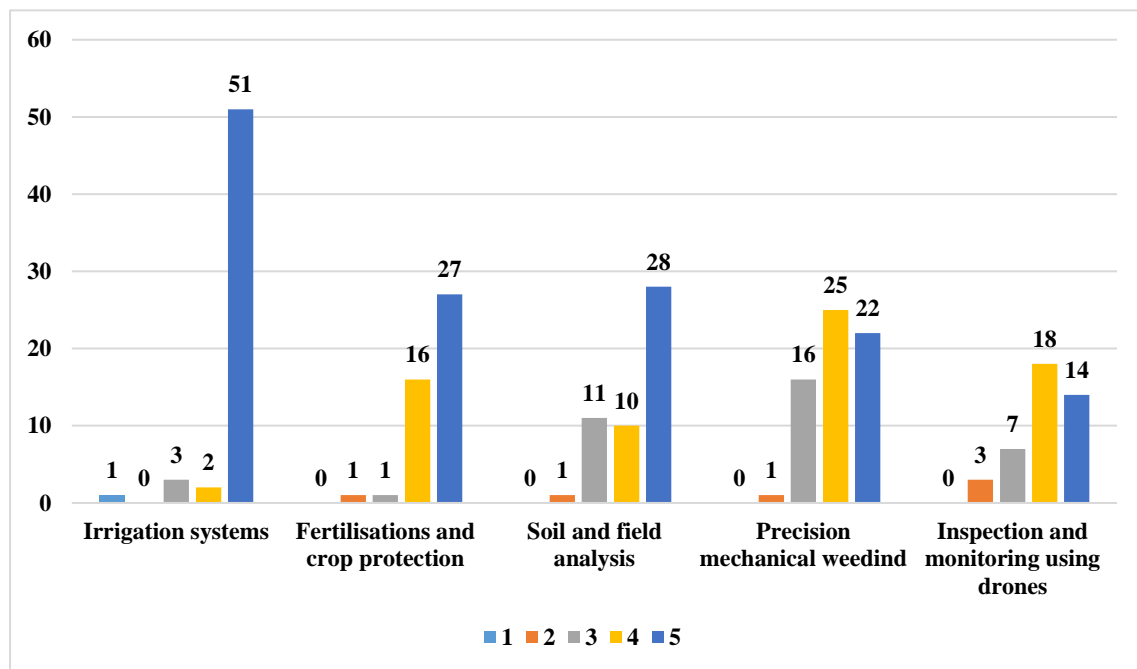
Figure 6: Stakeholder opinion on the need for smart agricultural technologies in crop production - blacksea-cbc.net [7]

As far as can be seen, the majority of the participants in this survey stated that smart agricultural technologies are needed in irrigation systems.
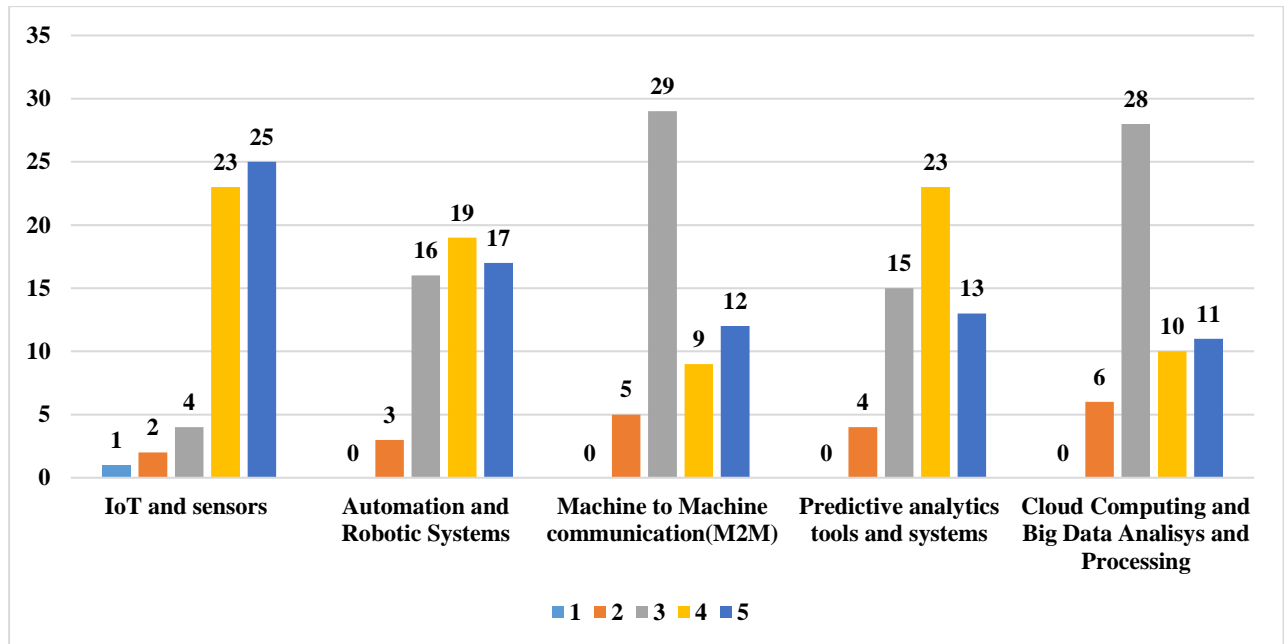
Figure 7: Stakeholder opinion on the need for smart agricultural technologies in agricultural engineering - blacksea-cbc.net [7]

From the analysis of the above figure, it can be stated that a large majority of the study participants chose IoT and sensors as the most needed technologies in agricultural engineering.

5. CONCLUSIONS

Digitization is the link that contributes to the development of efficient agriculture, which will increase farm performance, reduce consumption and costs, protect the soil, increase profits and protect the environment. Based on this regional analysis, we can say that the majority of participants in the 2020 survey for farms and farmers in Romania said that the use of smart farming can help them increase productivity. 98.2% of stakeholders considered that crop production needs smart farming technologies. The majority of respondents also said that smart farming technologies are needed in irrigation systems. It can be stated that a large majority of the study participants chose IoT and sensors as the most needed technologies in agricultural engineering.

LITERATURE:
1. Ingram, J., Maye, D., What Are the Implications of Digitalisation for Agricultural Knowledge? Frontiers in Sustainable Food System, 4(66), 2020, Available online: https://www.frontiersin.org/articles/10.3389/fsufs.2020.00066/full
2. Rotz, S., Duncan, E., Small, M., Botschner, J., Dara, R., Mosby, I., The politics of digital agricultural technologies: a preliminary review, Sociologia Ruralis 59, 2019, pp. 203–229. Available online: https://onlinelibrary.wiley.com/doi/full/10.1111/soru.12233
3. Ciurea, M., The Digital Economy in Romania: Theoretical Approaches and the Current State of Development in the Context Imposed by the European Union, Advances in Economics, Business and Management Research (Atlantis Press), Vol. 105, Proceedings of the Ist International Scientific and Practical Conference on Digital Economy (ISCDE 2019), 2019, Chelyabinsk, Russia, pp.539-545. DOI: 10.2991/iscde-19.2019.104
4. Saiz-Rubio, V., Rovira-Más, F., From smart farming towards agriculture 5.0: a review on crop data management, Agronomy 10 (2020) 207 DOI: 10.3390/agronomy10020207

5. Man, M., Ciurea, M., Considerations on the Common Agricultural Policy in Romanian Agriculture, "Ovidius" University Annals, Economic Sciences Series, Vol. XVII (2), 2017, pp. 243-248

6. https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/ddn-20220609-1

7. Black Sea, Jointly preparing the conditions in the agricultural and connected sectors in the BSB area for the digital transformation (BSB Smart Farming), Project funded by European Union, 2021, Available online: https://blacksea-cbc.net/wp-content/uploads/2021/04/BSB908_BSB-Smart-Farming_Conditions-in-the-agricultural-and-connected-sectors-in-the-BSB-area-of-Romania-for-the-digital-transformation_EN.pdf

IMPROVING MOROCCAN SCHOOLS' EDUCATION QUALITY THROUGH RBM APPROACH IN SOCIAL INNOVATION PROGRAMS THAT TEACH THE 21ST CENTURY SKILLS

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ABSTRACT

This research paper investigates the application of Results-Based Management (RBM) in social innovation programs, specifically those aimed at fostering 21stcentury skills to enhance the quality of education in Moroccan schools. The study aims to comprehend the impact and effectiveness of RBM in delivering the intended results of social innovation programs, that address the fourth sustainable development goal which is quality education. The paper provides a comprehensive literature review on social innovation, RBM, the theory of change, and education, emphasizing the importance of 21stcentury skills as important life skills for students. Furthermore, it explores the connection between social innovation and quality education, as well as the influence of RBM implementation in social innovation programs. The study incorporates a case study of Bina', a Moroccan social innovation program led by Educ'Ride and NOBOXLab, that employs RBM to enhance educational quality in eight primary and secondary Moroccan schools. This process involves the planning, monitoring, and evaluation of various activities designed to generate a range of outputs and outcomes, ultimately achieving the program's primary objectives.
Keywords: Social innovation, Quality Education, 21st Century Skills, Results-based management, Theory of Change

1. INTRODUCTION

Throughout the last decade, we, as global citizens, have been suffering from different social issues that the United Nations have listed as the "18" global issues, such as climate change, gender inequality, medical care inaccessibility, quality education, and many more(United Nations, 2018). The UN has then defined 17 goals (known as the Social Development Goals) to tackle those issues and ensure that by 2030 all people enjoy peace and prosperity(United Nations, 2018). As aforementioned above, education manifests its importance in it being the fourth social development goal, as it is a social institution serving the needs of society(González García, 2020), in addition, it is also indispensable for society to survive and thrive and continuously evolve to meet the challenges of the fast changing and unpredictable globalized

world. Moreover, it has come to light that having education alone is not sufficient to keep illiteracy at bay and continuously decrease it, but the assurance of quality education proved to be the key factor in fighting and eliminating illiteracy, school drop-outs, and learning poverty(Barrett, 2006). Even when children attend school, they might receive a poor-quality education that leads them to drop out from school without acquiring basic numeracy and literacy skills, which, according to numerous studies, can have a huge impact on their lives later on (increased poverty, limited job opportunities...). Therefore, it is possible to avoid such negative impacts from happening by making sure that every student has access to quality education that enables upward socioeconomic mobility and is a key factor to escaping poverty(González García, 2020). Similarly, Moroccan society faces many challenges that can't be tackled by the government and the market alone. In order to support the government and the numerous market actors in finding solutions to different environmental, health, education, socio-economic issues, citizens, civil society actors and businesses are getting involved(Manal El ABBOUBI, 2020). This commitment that aims to provide new solutions and responses to unaddressed societal issues is articulated in the form of social innovations, à lever of action capable of providing effective solutions to problems that have little or no impact addressed. Furthermore, government intervention and market forces alone are not enough to solve vast and intractable global challenges confronting society today. The necessary for social change are innovation and entrepreneurship (Dykes, et al. 2010). In Morocco, things are not different. The use of new alternative models of territorial development and basing them on the practices of social innovation is a key element to face the country's current serious problems at different levels(Manal El ABBOUBI, 2020), including problems related to the education sector. In fact, there is much to be done to improve quality education in Morocco, and it is a shared responsibility that involves an entire ecosystem, including the government, businesses, academia, and citizens. However, in order to lead a successful social innovation initiative, it is necessary to have external and internal support that will help the initiative to survive, including a set of competencies. In fact, according to the GEM Index1 2019, the fear of failure of initiatives is important in Morocco with a rate of 42.52%(Niels Bosma, 2021). Moreover, one of the main reasons why social innovative initiatives fail is because of the lack of adequate management skills that will help the initiative achieve its goals and scale. For this reason, this research highlights the importance of using the RBM approach in conducting social innovation programs. It has become necessary now, in the light of the implementation of many development programs that relate to any sector, to achieve tangible results to contribute to solving the problems associated with it, resulting in the achievement of the objectives of the program(UNESCO, 2020). But to ensure the achievement of the program objectives, one should not only wait until the end of the program to measure and evaluate the results and objectives set, but rather, attention should be paid to the process of monitoring the achievement of results linked to the target audience of the project continuously during the period of project implementation and address any gaps or problems that may block the program's progress(International Committee of the Red Cross, 2008). From this point of view, it has become necessary to rely on results-based management to ensure the success of development projects. This research paper investigates the application of Results-Based Management (RBM) in social innovation programs to enhance the quality of education, and aims to answer the following research question: How can social innovation programs use RBM as an approach to enhance quality education in Moroccan schools that teach the 21st century skills? In addressing the research question, our initial approach will involve an examination of existing literature, focusing on key themes such as Social Innovation, The Theory of Change, RBM as well as an overview of the state of education in Morocco.

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[1]Global Entrepreneurship Monitor (GEM) is a consortium of national country teams, primarily associated with top academic institutions, that carries out survey-based research on entrepreneurship around the world.

Then we will address the different links between the key concepts with a particular emphasis on the use of RBM in social innovations and how RBM can be used to achieve the global goals of education. Finally, to address the research question, a single case study has been selected, the case chosen is Bina', which is a program that took place from the 12th of April 2021 to the 13th of June 2021, intending to accompany Moroccan primary and secondary schools' teachers in implementing the program's activities and achieving its key results following the RBM process that includes the planning, monitoring and evaluation of the program's activities.

2. LITERATURE REVIEW
2.1. Social Innovation
The necessity of innovation is as old as the history of human civilization. Currently, innovations are profoundly becoming the engine of social change and adaptation for ensuring a better society. A recent Young Foundation report defines social innovations as new ideas (products, services, and models) that simultaneously meet social needs and create new social relationships or collaborations. In other words, they are innovations that are both good for society and enhance society's capacity to act(Hämäläinen, 2007) It is possible to conceptualize social innovation as a driver of systemic social betterment in a broad sense(Dykes, 2010). Based onThe Social Innovation Exchange and Oxfam, three levels of social innovation can be defined: Incremental, substantial, and radical (or disruptive), it can vary from making small improvements in performances to making a big impact and as a result cause a systemic change(Bond SIX and Oxfam, 2016). The more the magnitude and level of social innovation get higher the more the risk will get higher. Incremental, substantial, or radical social innovations are solutions to problems that exist within society that contribute to the development of the livelihoods of individuals, this development is called "social impact" which also leads to social change. Radical innovation requires new competencies, skills, and expertise because it challenges the status quo by introducing a new product/service orprocess a whole sector, which puts this kind of innovation at relatively highrisk and may experience strong systemic resistance to change.

2.2. The Theory of Change
A theory of change is a purposeful model of how an initiative such as a policy, a strategy, a program, or a project contributes through a chain of early and intermediate outcomes to the intended result. Theories of change help navigate the complexity of social change. A theory of change is a method that explains how a given intervention, or set of interventions, is expected to lead to specific development change, drawing on a causal analysis based onavailable evidence(Armitage, 2019).Sustainable changehappens through social innovations and systems that support its outcomes. To elaborate, in order to make change happen, it's necessary to have a system that reinforces innovation and supports it instead of having a system that shuts it down. The three-step changeparadigm was developed by Kurt Lewin in 1951.

Figure following on the next page

UNFREEZE: Preparing the desired change.
This initial step involves creating a readiness for change by breaking down existing mindsets, beliefs, and behaviors.

CHANGE: Implementing the desired change.
This phase involves introducing new processes, behaviors, or systems to drive the desired transformation.

REFREEZE: Solidifying the desired change.
This phase aims aims to reinforce the new behaviors, values, and norms as the new "status quo."

Figure 1: The Kurt Lewin's Three-Step Change Model
(Source: Collierbroderick)

According to this social scientist, is a dynamic equilibrium of forces acting in opposite directions. Because they drive personnel in the desired direction, driving forces help to enable change. Employees are pushed in the other direction by restraining factors, which stifle change. As a result, these factors must be investigated, and Lewin's three-step approach can help move the balance in the right way(Rad, 2021).Consequently, Lewin's model illustrates the effects of variables that promote or inhibit transformation. Change is aided by driving forces, but change is hampered by restraining elements.The Kurt Lewin's Three-Step Change Model is a widely recognized framework for understanding and implementing organizational change, it provides a structured approach to managing and facilitating change within an organization. In fact, the Kurt Lewin Change Model is a versatile framework that can be adapted to suit the needs of different organizational contexts such as corporations, businesses, non-governmental organizations, educational institutions and more.

2.3. Results-Based Management (RBM)
RBM is a management strategy by which all actors contribute directly or indirectly to achieve a set of results, ensure that their processes, products, and services contribute to the achievement of desired results. The actors in turn use information and evidence on actualresults to inform decision making on the design, resourcing and delivery of programs and activities as well as for accountability and reporting. RBM is an approach of management that keeps an organization focused on the results expected to be achieved through the whole process (planning, monitoring, and evaluation) and not on the implementation of activities or on budget control. In fact, to understand the value of a certain project, its results must be measured. RBM is a strategy that lays the foundations ofan integrated approach to project and program management, including planning, monitoring, and evaluation. When adopting this approach of management, all actors including actors who contribute directly or indirectly to achieving a set of results must make sure that their products, services, and processes contribute to the achievement of the desired results (United Nations Office 2018). RBM is also referred to as managing for results; in the context of international development, it is often called managing for development results(Canada, 2016). Therefore, the aim of RBM is to improve the management of a project/program throughout a project life cycle that starts with the initiation phase (analysis, project planning and design), to implementation (results-based monitoring, adjustment, and reporting), and evaluation (lessons learned into future programming).As presented previously in the definitions, the RBM follows a life-cycle approach that is aligned with the key stages of the project or program cycle(United Nations Office, 2018).
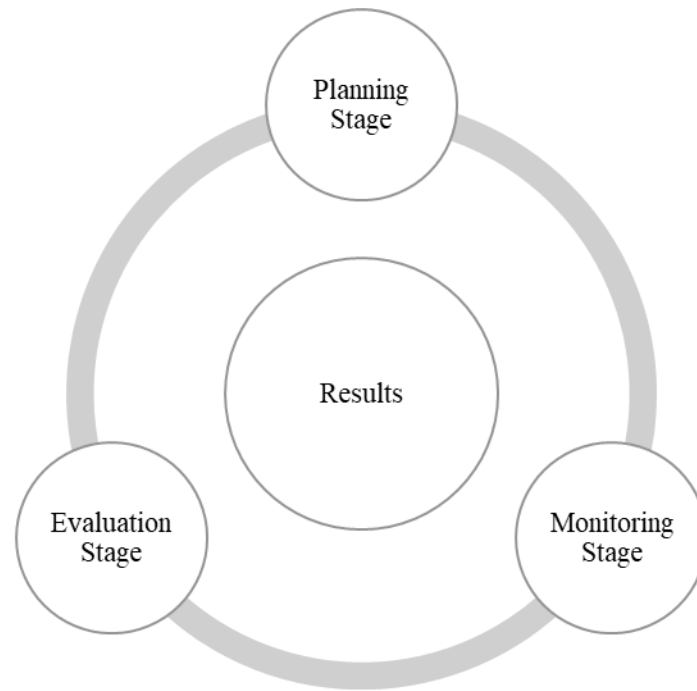
Figure 2: Result-Based Management Cycle
(Source: UNDG)

The first stage of the cycle is the planning phase, the goal of this phase is to set a vision and define results framework.During the implementation of a program or project, monitoring becomes an essential task to help ensure that the desired results are being achieved. Finally, evaluation is the last stage of the process, it allows to give feedbacks and help managers to build on evidence to adjust strategy, design and implementation if needed(International Committee of the Red Cross, 2008).

2.3.1. The planning stage
This stage focuses mainly on identifying the main problems to be tackled through a deep understanding of a situation to identify the problems, the causes of the problems and the consequences. Numerous tools can be used to target the problem to be tackled including the "problem tree" or the "why tree", this tool helps to structure and identify the negative aspects of an existing problem and develop a problem to solve it using an "objective tree", which is a tree that determines the expected results(International Committee of the Red Cross, 2008). The result chain is a tool that can also be used in this step, it allows breaking complex change into manageable building blocks or steps that lead to one another, making it easier to sequence and identify changes during both analysis and planning. It begins with inputs, moving through activities and outputs that lead into outcomes, which allows impact to happen(International Committee of the Red Cross, 2008). In addition, an activity schedule must be made, it aims to graphically present the project's activities. It also helps identify the logical sequence of the activities planned and expected duration that exists. In addition to setting the activity schedule, it is also important to identify the stakeholders of the program/project, they include beneficiaries, intermediaries, implementers, and donors.

2.3.2. The monitoring stage
Monitoring is a compulsory, continuous and regular process that aims to track the different constitutive elements of the project, to achieve the project's objectives. The purpose of monitoring reports is to provide updates on achievements against indicators and milestones and

on trends, as well as to provide guidance on the elements of the project that need to be adjusted(United Nations development group, 2011). One of the important processes in RBM, more specifically in the monitoring phase, is the performance assessment. Performance indicators are key tools that help in assessing the performance of a specific program/project. They are qualitative or quantitative means ofmeasuring anoutputoroutcome.Indicators arecritical within RBM approaches, as they can indicate how a result will bemeasuredorquantified,andhowitwas achieved.Performance indicators serve as leading figures for change. They enable to validate the improvements sought by the program or project in question. Performance indicators are used to aid in the planning, programming, management, implementation, monitoring, evaluation,and reporting processes (UNESCO, 2020).

2.3.3. The evaluation stage
Evaluation can be judged as a good evaluation if it provides information and recommendation that helps the team in making sound decisions and in modifying/improving programming, if based on credible and reliable evidence(United Nations development group, 2011). Infact, learning can emerge from a formal exercise (like an evaluation), or happen informally through periodic team meetings where the team is brought together to reflect more on the program strengths and weaknesses. The purpose of documenting lessons learned is mainly to use and share the knowledge derived from an experience (a project or program) in order to promote the recurrence of desirable outcomes or preclude the recurrence of undesirable outcomes(International Committee of the Red Cross, 2008).

2.4. The State of Moroccan Education: An Analysis of PISA Test Results and Systemic Issues
To highlight the effectiveness and performance of Moroccan education, we choose to present the ranking of Moroccan students in the 2018 PISA test. Morocco was ranked 75th in the latest PISA test out of 79countries in 2018(OECD, 2019). The program is an international assessment that evaluates 15-year-old student's skills in reading, mathematics, and science. PISA is one of the first standardized tests designed to measure not only student knowledge in literacy, math, and science but also to assess how studentsapply their knowledge and skills to analyze, reason, and communicate effectively as they solve problems. The assessment also measures each participant's ability to continue learning throughout life(Dykes, 2010). Moreover, over the previous two decades, Morocco has made big progress in expanding access to primary education. Building of thousands of schools, the hiring of teachers, and the completion of Universal Primary Education were all achieved, along with significant increases in student learning outcomes(Mabrouk, 2019). Despite the fact that the school system has seen significant and quick improvement, there are still issues related to the competency-based approach: since 2000, all cycles of school education have undergone numerous educational achievements: Curricula have been revised and new teaching guidelines have been adopted, such as the Skills Approach (APC)(Zerrouqi, 2017). However, on the ground, these initiatives have not produced a substantial improvement in theresults of the learners and the teaching activities in the classroom due to many blockages. The APC defines the expected competencies of students at certain times of their school curriculum but remains silent on how to make them competent. In addition, the time dimension in the teaching/learning process is neglected, namely the hourly distribution of subjects taught and the number of hours of work of teachers quite high, especially in primary schools(Abdelkader El Moutaoukil, 2020). In addition to that, the education needed today should be a vehicle for the transmission of civic and ethical values that foster responsible citizenship and foster a desire to contribute to the common well-being. However, Moroccan schools seem to weakly transmit the values of law, citizenship, and respect.

The factors responsible for the decline in the Moroccan education system are largely interdependent, such as the training gap of teachers and their difficult working conditions, the pedagogy indifficulty, and the linguistic inconsistency contribute to the weakness of school acquisitions.

3. RBM AND SOCIAL INNOVATION PROGRAMS
3.1. The use of RBM in social innovation programs
The practice and approach of RBM have been refined and developed over a period of time in order to guide the development programs held by the civil society and organizations to achieve the results desired. RBM is also an approach that was developed to ensure delivery of results aligned with social benefits to people. In fact, RBM is a management approach used bythe global community both in thecorporate sector and professionals to conduct programs and projects that make the world a better place through broader engagement of people, in particular, those left behind, in addition to that. Due to the successful and sustained adherence to RBM practice by numerousgovernment departments and civil society organizations in the planning, monitoring and evaluation of sustainable development programs. When formal systems do not tend to react or remain closed to change towards innovative solutions for existing and future challenges, demands, or needs, gaps are emerging which are sometimes taken up by other actors. Such gaps for providing innovative services do not always have to be big and widely seen system failures. Sometimes, they can also be smaller niches, demanding new ideas and approaches. At both levels, programs from different backgrounds (from civil society and science to the public sector and economy) with different approaches and aims, are coming into play(Schröder, 2019). These programs strive to proactively address a range of societal issues and generate solutions that effectively tackle multiple challenges. These programs are recognized as "development" programs because they actively contribute to the advancement of society. They focus on addressing community problems in order to alleviate disadvantages.

3.2. RBM as a tool to achieve the global goals of education
The goals of education around the world are common, education is meant to prepare young people as future citizens and to help them to develop core knowledge and skills to be successful academically and professionally. In fact, education's goals are also stated in curriculum documents (ex. school curricula or national curriculum frameworks)(OECD, 2019). These goals are divided into two main categories: academic and long-term aims. Academic aims are the discrete and concrete knowledge and skills that students are expected to learn and acquire (ex. 9 years old should have a mastery of multiplying numbers up to twelve in their heads)(OECD, 2019), and long-term aims are more general and abstract (ex. children must become confident learners and healthy citizens)(OECD, 2019). As recent studies of the Programme for International Student Assessment (PISA), socioeconomic criteria are found to be a major framework condition for the capabilities of learners and can, therefore, be a major hurdle towards their performance(Schröder, 2019).This is why the major theme reflected by social innovation programs in education is the need toreduce disadvantages. In fact, In the present era, more than ever, addressing the challenges faced by our society requires a strong emphasis on achieving educational quality. Nevertheless, there is a widely shared agreement that our education systems are falling short in adequately equipping all students with the necessary knowledge and skills essential for success in life, career, and active participation in citizenship(OECD, 2019). One of the most common characteristics of innovative schools found across different sources is the ability to offer the acquisition of skills for the 21st century. These are most commonly defined as the 4Cs: communication, collaboration, creativity, and critical thinking. The 21st century skills are not new but have become newly important. Many references to 21st century skills development within the literature focus on the school

curriculum. Many teachers make choices about their pedagogy based on a local or national curriculum structure and not on their preference. Many curricula now include "core competencies", "transversal skills" or "general capabilities" which point towards certain kinds of pedagogy andprovide alternative starting points for learning design. Some curricula are constructed to be "competency-based2", with the idea that students should move through the development of different skills and knowledge levels at their own pace(Peterson, 2018)

4. METHODOLOGY

To carry the research forwards, a single case study has been selected as the preferred research methodology to address the research question. The method of case studies is general, and has been used in many past studies(Patton, 2002). In this study, a case study approach is used as a method of study to understand the impact of using RBM in conducting a social innovation program that teaches 21st century skills for a higher quality education in Morocco. According to Yin (2003) a case study design should be considered when: (a) the focus of the study is to answer "how" and "why" questions. A hallmark of case study research is the use of multiple data sources, a strategy which also enhances data credibility (Yin., 2014) The methodology for this paper involves a single case study of a social innovation program, Bina, which was based in Morocco held by Startup "NOBOXLab" in partnership with non-governmental organization "Educ' Ride", with a vision of reimagining Moroccan schools as dreamed and realized by students and teachers. The program was implemented between April and July 2021 in 7 Moroccan schools targeting 8 teachers from 7 Moroccan cities (Tangier, Taourirt, Taza, Settat, Safi, Kénitra and Larache) with 218 students. To answer the research question, both qualitative and quantitative data were analyzed. The study drew on information from both primary and secondary sources using observation and reportdocuments to report on the use of RBM by the program owners, with a focus on documenting the process and outcomes of the program on the target beneficiaries.

5. RESULTS
5.1. Conducting Bina' through RBM
5.1.1. The program implementers
- Educ'Ride: Educ'Ride is an NGO created on September 2019, following a world tour having identified key success factors for inclusive and innovative educational models. It is a community of Moroccan young people who pledge to contribute to a human-centered and inclusive education. Aspiring to make a concrete and lasting impact through co-built programs with Moroccan teachers mainly at primary level. Educ'Ride have worked on additional project which is Teaching Heroes.
- NOBOXLab: NOBOXLab is a Moroccan Startup created on November 2017, that offers services designed for children aged from 6 to 12 years old to improve their educational experience through a creative program of hands-on learning exercises from a variety of scientific fields and EdTech solutions such as video series, games, and AI systems. Through experimenting, watching videos and playing educational games, children learn essential skills in innovation, critical thinking, and social engagement. NOBOXLab works on additional projects such as Tafanoun, Mo5talif and Fodoul

5.1.2. The planning stage
The program was developed after startingobservations of the overall functioning of the Moroccan education system, includingobservations of the role of the learners in the system, the

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[2]A curriculum that emphasizes the complex outcomes of a learning process (i.e. knowledge, skills and attitudes to be applied by learners) rather than mainly focusing on what learners are expected to learn about in terms of traditionally - defined subject content.

stateof mindofteachers,and certainfactors related to the current crisis stated in institutional reports. Theprogram was designed to tackle the issue of low quality education in Morocco, particularly, Moroccan schools' inability to teach life skills to Moroccan learners through its curriculum. A strategy was then developed to ensure the effective implementation of the program describingthe different elements (inputs, activities, outputs, outcomes, and impact)ofthe program and its intervention logic involving all partners and stakeholders(Table 1).

	Program summary	Indicators	Meansof verifications
Goal	1.Goal to be achieved (1) 2.Goal to be achieved (2) 3.Goal to be achieved (3)		
Outcome	1.1.Outcome to achieve goal (1)	1.2.1.Indicator (1) to measure outcome (1)	• Weekly monitoring reports of target beneficiaries
	2.1.Outcome to achieve goal (2)	2.2.1.Indicator (1) to measure outcome (2)	
	3.1.Outcome to achieve goal (3)	3.2.1.Indicator (1) to measure outcome (3)	• Weekly team meetings
Output	1.1.1.Output to achieve outcome (1)	1.3.1.Indicator (1) to measure output (1)	• Transcription of workshops recordings
	2.1.1.Output to achieve outcome (2)	2.3.1.Indicator (1) to measure output (2)	
	3.1.1.Output to achieve outcome (3)	3.3.1.Indicator (1) to measure output (3)	
Activities	1.1.1.1.Activities to achieve output (1)	1.4.1.Indicator to measure activity (1)	
	2.1.1.1.Activities to achieve output (2)	2.4.1.Indicator to measure activity (2)	
	3.1.1.1.Activities to achieve output (3)	3.4.1.Indicator to measure activity (3)	

Table 1: Bina' intervention logic model
(Source: Authors' own work)

Developing the strategy helped provide the intervention logic model to have a clear idea on how the expected results should be realized, identifying the main means and modalities of action, reflecting on the constraints and opportunities, and designing an implementation plan for these actions. Moreover, a set of indicators was identified for the outputs and activities of the program in order to guide the intervention logic, different means of verifications were set to calculate the indicators using different sources of information.

5.1.3. The implmentation stage
During the program, teachers were trained on its approach and methodology to facilitate in class and were monitored to track the progress of the activities that were implemented. This approach allowed teachers to fully understand the program's approach as well as provided them with personalized online assistance, which led to improved knowledge on the implementation of the program and initiated them to innovative practices that could be used in their classes. Moreover, multiple workshops were organized and facilitated during the implementation of the program in order to exchange and learn from mentors which helped increase awareness on the importance of enhancing the 21st century skills for learners and initiate teachers to the change

makers attributes and the leadership concept. Teachers assisted and facilitated a series of activities in class and students were asked to communicate, collaborate, plan together, think, lead groups, use problem-solving, and many other skills which enhanced a positive state of mind, their self-trust and confidence, improved skills acquisition, and behaviors such as oral and written expression, communication, taking initiative, active listening, autonomy, collaboration, problem solving, coexistence, sharing, planning, and accountability. This was expected to improve their learning environment and enhance their skills to be future leaders and changemakers later in life.

5.1.4. The monitoring& evaluation stage
Achieving these goals required achieving a set of outcomes, and for each outcome, a set of indicators was identified to measure the degree of achievement of the specific outcome (Figure3).
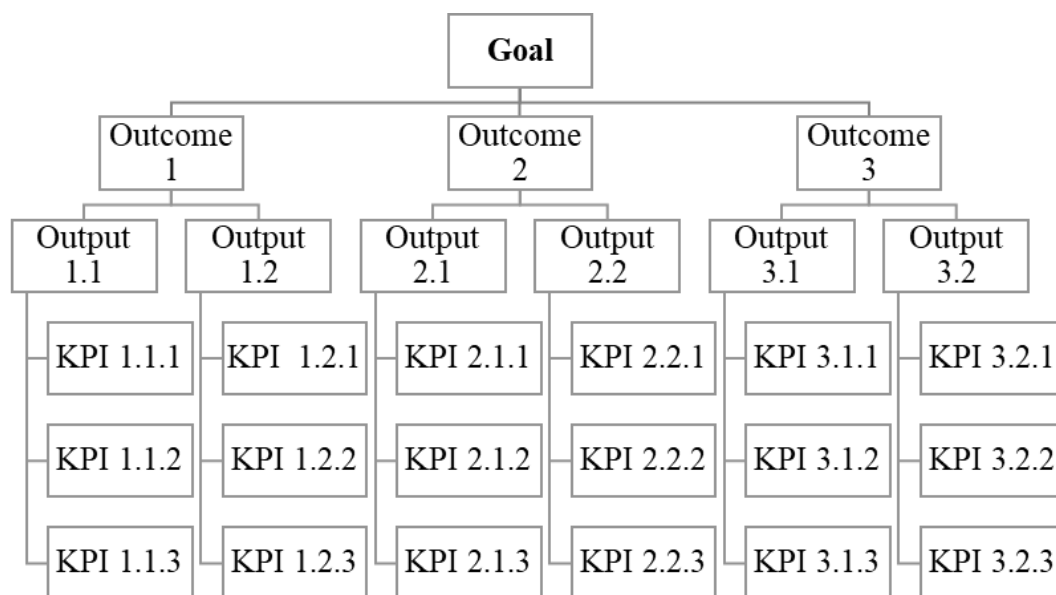
Figure 3: Outputs measurement through KPIs
(Source: Authors' own work)

For instance, in order to make sure that teachers improved their knowledge on the implementation of the program within their classrooms, a key indicator was set specifically, which is the number of teachers who implemented the program within their classroom successfully. Another example is the indicator set to measure how many students improved their skills during their participation in the Bina program, which is the total number of students who participated in the program's activities. The reason behind choosing this indicator is that the program's activities were designed to help students learn a different set of skills using the experiential learning approach,the measurement of the key indicators was done throughot the implementation of the program's activities to ensure that student acquired a set of the 21st century skills.The expected results were formulated in clear and measurable terms, and to measure them, key performance indicators were identified for each expected result, which specified exactly what was to be measured along a scale and dimension.During the implementation phase, RBM helped to ensure and monitor that all available inputs continued to support the intended results. The progress towards the expected results was monitored through different processes. This helped in drawing on data of actual results achieved, comparing the planned with the actual results, and providing information about the use of resources, the activities implemented, the outputs produced, and the results achieved(Table 2).

What?	Output	KPI Explanation	Source	Unit	Output achieved
Outcome achieved	**Skill 1**				
	Output 1 to help learners acquire <u>skill 1</u>	Detailed explanation of the different KPIs that measure the achieving of output 1	Source of KPI	Measurement Unit (Percentage or number)	Final quantified Output
	Skill 2				
	Output 1 to help learners acquire <u>skill 2</u>	Detailed explanation of the different KPIs that measure the achieving of output 1	Source of KPI	Measurement Unit (Percentage or number)	Final quantified Output

Table 2: Bina' Outcome and Output measurement
(Source: Authors' own work)

Monitoring and evaluating the program's objectives progress allowed the team to understand numerous points. It was important to track the progress of each teacher and collect detailed data on how they conducted each activity to ensure that teachers were not only implementing the activities for the sake of implementing activities only, but also to reach the main goal and objective of the program which was allowing students to develop life skills. Monitoring the progress of the program results and reporting on the results achieved, the resources involved allowed the team to self-evaluate the program and integrate lessons learned and findings by interpreting the information coming from the monitoring systems to be able to explain the eventual gaps between the expected results and achieved results. One of the main challenges that the team faced throughout the evaluation phase was how to create an evaluation system that exploited data collected in an effective way, which would then allow the team to learn. Therefore, the use and collection of data were very important prior to the success of this phase. The work done by the Bina' team broke the norm of collecting various information and data that get forgotten. In Bina', data and feedback collection were prioritized because they helped in improving and personalizing the Bina' experience for both students, teachers, and the team. It is important to understand that the evaluation phase was done to help better demonstrate the program's practicality and how it drove change by building evidence based on well-chosen indicators that measure each of the goals set to be achieved

5.2. Bina' and the Theory of Change
Bina's team prepared teachers to be aware of the necessity of change to happen by organizing a presentation program where the participants attended the first workshop to introduce the philosophy behind the program as well as the "why" and "what" behind it. The teachers were then invited to discuss issues related to education and its root causes (Figure 4). Because the teachers became fully aware of what the program offered them as a solution that tackled some of the issues they mentioned, they then built strong motivation and participated to effect a meaningful change. However, some of the teachers were a little hesitant and uncertain about what the program's effect could be and if it could really allow change to happen. To accept change and contribute to making it successful, teachers understood how it would benefit them. Time and communication were two key success factors for the change to happen. The teachers needed time to observe and understand the change while implementing the program's activities within the class, and they also needed to feel highly connected to the program and its team throughout the transition phase, which can be seen in their participation in the workshops organized, their interaction and engagement in the WhatsApp group dedicated to them, as well as their appreciation of the team's efforts to sustain good and effective communication. Once

the change started to take shape by seeing the realized dreams and observing how their students' acquired skills that they used within and outside the classrooms such as communication, critical thinking, problem-solving, teamwork, and other 21st century skills, teachers embraced new ways of teaching and facilitating knowledge acquisition.
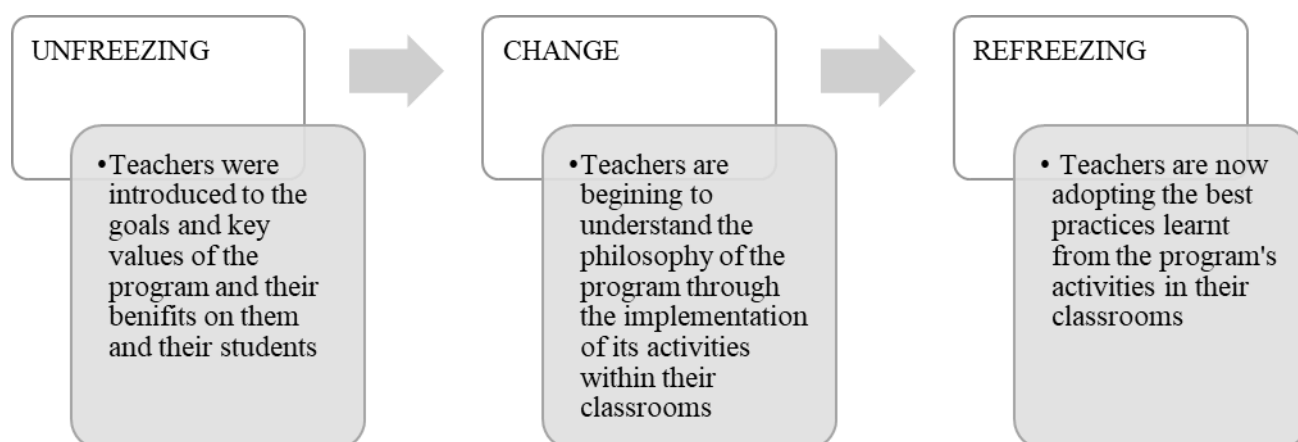
Figure 4: Bina' Theory Of Change
(Source: Authors' own work)

6. DISCUSSION, LIMITATIONS AND FUTURE RESEARCH AVENUE

It is important to first understand that social innovations in the education sector aimsto set up an enabling environment to improve the quality of teaching and learning, and allowing students to learnboth hard and soft skills that will allow them to have a competitive advantage academicallyand professionally. To answer issues related to quality education, multiple initiatives from civil society, tothe public sector and the private sector with different approaches and aims intervene. Incremental, substantial or radical innovations that lead to the betterment of quality education through services, products or processes require a full understanding of the theory of change, which will allow implementers to better minimize risks that may lead innovations to succeed and to achieve the desired change. In fact, resistance to change is one of the main barriers to social innovation. In fact, some teachers shared that they received support from the schools' staff as well as their fellow teachers, and that they also inspired teachers around them to adopt teaching practices that will push students to use critical thinking, creativity, problem solving etc. On the other hand, other teachers shared that their school staff wasn't supportive of the implementation of Bina' in their classrooms, in addition to the negative comments they receive from their fellow teachers, which is explained according to Bina' teachers by wanting to stay in the traditional teaching model. The resistance of the school staff to the Bina' program is a question that should be addressed because it is an obstacle that may often lead participants to lose motivation. In fact, RBM is beneficial for many reasons: first of all, it helps to lead a more effective program and project implementation, in other words, a shared understanding of "desired results" can help in revealing misunderstandings and disagreements about the goals to be achieved by a program's implementers and partners, which can stand against the effective implementation of the intervention. Therefore, setting clear and measurable objectives in the early stages of results-based management can prevent ineffective program implementation. Another reason why results-based management can be beneficial to use is because it helps better communicate programs' and projects' results to funders, donors, communities, future beneficiaries in an unambiguous way. It also helps in identifying what resources are needed for each objective to be achieved, as well as clarifying assumptions, and understanding how risks can block. programs' progress to either minimize or prevent them.

Moreover, understanding results can help understand when, how and what to do, using what input, to achieve which result. Finally, setting clear results during the planning and monitoring phases prepares programs and projects for effective evaluations. Knowing what the desired results are and how to measure and document them is a key success factor of any organization's program or project. Reporting on the results achieved versus the results desired helps programs to better understand gaps (if there were any) and learn lessons from its own monitoring and evaluation. Another advantage of using results-based management in projects and programs can be seen when implementers are able to assess the change that the intervention is producing, as well as knowing how they are making a difference to the previous situation, in other words, observing positive impact.This research has many weaknesses and is limited in both sample size and profile. Therefore, if the given time and resource constraints were not in place, the multiple case studies approach would be useful in gaining a greater degree of breath and generalizable findings through both quantitative and qualitative research. Just within the Bina' program, there were 218 students who participated and could potentially offer insightful information to the study. The contact was limitedto teachers, ambassadors, and some students during theimplementation of the program. It would be very interesting to explore the impact of theprogram through the lens of all the direct and indirect beneficiaries (including school staff, students' parents...). Therefore, this study is limited as a single case study. To attempt the same research question, conducting a multiple case study design would be interesting while adding further research questions.

7. CONCLUSION
The RBM approach was used in conducting Bina' to improve its desired results, as well as focusing on the objectives defined to deliver the results expected, by planning, monitoring and evaluating the intervention lead by NOBOXLab and Educ'Ride for teachers and students of Moroccan primary and secondary schools. During the planning stage, the planning of the program required identifying the causes of the main issue to brainstorm and suggest a solution capable of tackling one root cause of the main issue or more. Then a clear strategy was developed that described the different results to be achieved, the activities to implement for the results to be realized, as well as the inputs and resources to use that will help maintain the activities. The expected results were formulated in clear and measurable terms, and in order to measure them, key performance indicators were defined for each expected result. The monitoring of the progress towards the expected results was done through different processes which helped in providing information about the use of resources, the activities implemented, the outputs produced and the results achieved. The monitoring of the program's progress helped in supporting the assessment of the overall results and integrating lessons learned to improve the quality of the next editions of the program.

LITERATURE:
1. Abdelkader El Moutaoukil, S. O. (2020). Issues in Education Quality: School Reform. Agadir: International Conference of Education Quality.
2. Armitage, D. J. (2019). Applying a 'Theory of Change' Process to Facilitate Transdisciplinary Sustainability Education. Ecology and Society. Retrieved January 14, 2023, from https://www.jstor.org/stable/26797000.
3. Barrett, A. C.-D. (2006). Review of the'International'Literature on the Concept of Quality in Education. EdQual.
4. Bond SIX and Oxfam. (2016). An introduction to social innovation for NGOs. Retrieved December 25, 2022, from https://socialinnovationexchange.org/wp-content/uploads/2022/04/introduction-to-social-innovation-0416.pdf

5. Canada, G. A. (2016). Results-Based Management for. Ottawa. Retrieved from https://www.international.gc.ca/world-monde/assets/pdfs/funding-financement/results_based_management-gestion_axee_resultats-guide-en.pdf

6. Dykes, G. &.-K. (2010). Driving social innovation in education. Retrieved December 25, 2022, from https://www.researchgate.net/publication/263125874_Social_Innovation_in_Education#fullTextFileContent

7. González García, E. C. (2020). Quality Education as a Sustainable Development Goal in the Context of 2030 Agenda: Bibliometric Approach. Sustainability, 12. Retrieved from http://dx.doi.org/10.3390/su12155884

8. Hämäläinen, T. J. (2007). Social Innovations, Institutional Change and Economic Performance. Cheltenham, UK: Edward Elgar Publishing. Retrieved January 12, 2023, from https://doi.org/10.4337/9781847206992

9. International Committee of the Red Cross. (2008). Programme/Project management: The Results-Based Approach. ICRC. Retrieved from https://www.alnap.org/help-library/programmeproject-management-the-results-based-approach

10. Mabrouk, E. H. (2019). Problems and strategy of educational development in Morocco. 6(1), pp. 430–439. Milano: New Trends and Issues Proceedings on Humanities and Social Sciences. Retrieved from https://un-pub.eu/ojs/index.php/pntsbs/article/view/4196

11. Manal El ABBOUBI, S. T. (2020). INNOVATION SOCIALE AU MAROC, Etude sur l'Etat de l'innovation Sociale au Maroc. FONDATION ABDELKADER BENSALAH.

12. Niels Bosma, S. H.-S. (2021). The Global Entrepreneurship Monitor Global Report. London: The Global Entrepreneurship Research Association.

13. OECD. (2019). OECD FUTURE OF EDUCATION AND SKILLS 2030, OECD Learning Compass 2030 (A Series of Concept Notes). OECD Learning. Retrieved from https://www.oecd.org/education/2030-project/teaching-and-learning/learning/learning-compass-2030/OECD_Learning_Compass_2030_Concept_Note_Series.pdf

14. OECD. (2019). PISA 2018 Results (Volume I): What Students Know and Can Do. Paris: OECD Publishing. Retrieved from https://doi.org/10.1787/5f07c754-en.

15. Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). SAGE. Retrieved from https://aulasvirtuales.files.wordpress.com/2014/02/qualitative-research-evaluation-methods-by-michael-patton.pdf

16. Peterson, A. H. (2018). Understanding innovative pedagogies: Key themes to analyse new approaches to teaching and learning. OECD Education Working Papers. Retrieved from https://doi.org/10.1787/9f843a6e-en.

17. Rad, D. &. (2021). Theories of change in Agile Psychology. Technium Social Sciences Journal. Retrieved from https://doi.org/10.47577/tssj.v21i1.3773

18. Schröder, A. K. (2019). Social Innovation as a Driver for New Educational Practices: Modernising, Repairing and Transforming the Education System. Sustainability, 11. Retrieved from https://doi.org/10.3390/su11041070

19. UNESCO. (2020). Results-Based Management (RBM) approach as applied at UNESCO. Paris: UNESCO.

20. United Nations. (2018). The 2030 Agenda and the Sustainable Development Goals. Santiago.

21. United Nations development group. (2011). Results-based management handbook Harmonizing RBM concepts. United Nations.

22. United Nations Office. (2018). Results-based Management and the 2030 Agenda for Sustainable Development Handbook. Vienna: United Nations. Retrieved from https://www.unodc.org/documents/SDGs/UNODC_Handbook_on_Results_Based_Management.pdf

23. Yin., R. K. (2014). Case Study Research Design and Methods (5th ed.). SAGE. Retrieved from https://journalhosting.ucalgary.ca/index.php/cjpe/article/view/31030/25205
24. Zerrouqi, Z. (2017). Les performances du système éducatif marocain. Revue internationale d'éducation. Retrieved from http://journals.openedition.org/ries/4474

THE ROLE AND SIGNIFICANCE OF MINERAL RAW MATERIALS IN THE DEVELOPMENT ECONOMY OF KRAPINA-ZAGORJE COUNTY

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ABSTRACT
Mining has been developing rapidly in the world in recent years, following the global trends of economic development. The demand for certain mineral raw materials is growing rapidly, but natural, technological, legal and social conditions can greatly limit the capacities. The purpose of the study is based on the research of spatial planning documents and data on exploitation fields and exploration areas of mineral resources in the Krapina-Zagorje County. Research results are based on the previous knowledge about the exploration areas/exploitation fields and data, which were determined on the basis of the resource base of mineral raw materials (mining-geological study that serves as a basis for creating spatial plans in the part that deals with the management of mineral raw materials). In conclusion, in the Krapina-Zagorje County, mineral raw materials can be planned and produced only in places where they exist, because the locations for exploration and exploitation depend on the geological composition of the area. In this paper, the authors will elaborate a list of current active, planned, inactive, deleted exploitation fields and exploration areas in the Krapina-Zagorje County in relation to the territory of the Republic of Croatia.
Keywords: *exploitation fields, economy, exploration areas, Krapina-Zagorje County, mineral resources*

1. INTRODUCTION
Krapina-Zagorje County is located in the north-western part of the Republic of Croatia and belongs to the area of central Croatia. It is a separate geographical entity that stretches from the peaks of Macelj and Ivančica in the north to Medvednica in the southeast. According to the Act on the Territories of Counties, Cities and Municipalities in the Republic of Croatia (Official Gazette 10/97, 68/98), Krapina-Zagorje County includes 25 municipalities and 7 cities (Figure 1).

Figure following on the next page

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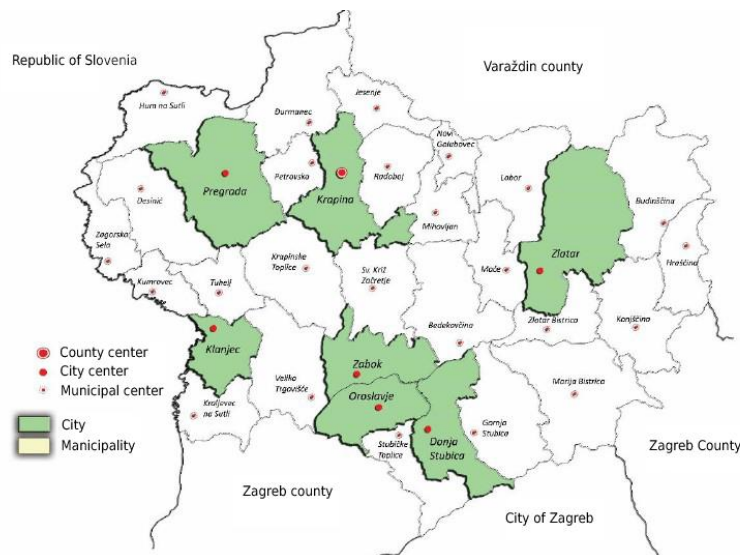
*Figure 1: Territorial-political organization of Krapina-Zagorje County
(Source: Adapted from the Institute for Spatial Planning of the Krapina-Zagorje County,
2023)*

According to official statistical data and the 2021 population census, 120,942 inhabitants live in the Krapina-Zagorje County (State Statistical Office, 2021). In the Krapina-Zagorje County, there are predominantly rural settlements and settlements that have been declared cities with appropriate activities: spatial planning, economic, social and political efforts are being made to direct the urbanization and development of cities. The increase in the number of inhabitants is continuously present in all urbanized settlements of cities and municipalities of the County, while the decrease is present in rural settlements. The industrialization of the Krapina - Zagorje County began with the development of heavy industry and lasted less than in developed countries (Penava and Družić, 2014). Manufacturing industry (metalworking industry, production of non-metallic mineral products and textile industry) is the most important economic branch of the Krapina-Zagorje County. The above-mentioned three activities account for two-thirds of the total income, expenditure and number of employees, as well as 80% of the total export of the processing industry (Report on the environment of the Krapina-Zagorje County 2014-2017, 2018). Due to the spread of the Covid-19 pandemic and accompanying measures, there is a visible drop in total revenues, revenues generated on the foreign market and the trade balance. In 2020, there were 2,457 companies operating in the Krapina - Zagorje County, which employed a total of 22,868 employees. In 2020, compared to 2019, the number of entrepreneurs increased by 4.9%, and the number of employees by 0.9%. Revenue from sales abroad was realized in the amount of 3.9 billion. kuna and recorded a decrease of 7.6% compared to 2019 (Basic indicators of the economy of the Krapina-Zagorje County, 2021).

2. MINING OF THE KRAPINA - ZAGORJE COUNTY
Mining is a branch of mining that is present in the Krapina-Zagorje County. According to the data of the Mining and Geological Study, there are 236 deposits and occurrences of mineral resources in the Krapina-Zagorje County, which include exploitation fields and exploration areas of mineral resources (Kruk et al., 2014). The study analysed the needs and potentials of mineral resources and determined a rational and sustainable way of managing mineral resources both economically and spatially-planningly (sites were identified, stocks and possibilities of exploitation of all mineral raw materials were determined). In the County, occurrences of metallic raw materials, non-metallic raw materials and energy raw materials are known. The metallic mineral raw materials represented are the following: iron ore and rare minerals Zr, Ru,

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Se, but these are occurrences of mineral raw materials without economic value. Non-metallic mineral raw materials include: technical-building stone, brick, bentonite, ceramic and refractory clay, construction sand and gravel, barite, gypsum, table salt, raw materials for the cement industry, architectural-building stone and carbonate raw materials for industrial processing. As for the energy mineral resources within the borders of the County, occurrences of coal and thermal springs were recorded (Figure 2).
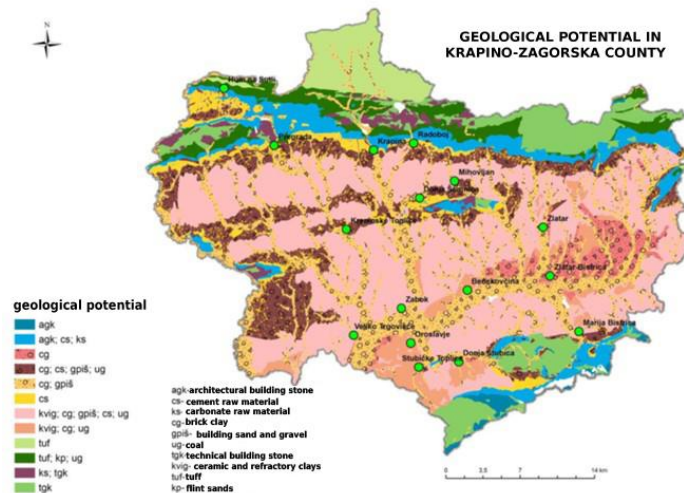
Figure 2: Map of geological potential in the convenience zones in Krapina-Zagorje County
(Source: Mining and Geological Study of Krapina-Zagorje County, 2014)

The quarries of Kunagora (Pregrada), Strahinjčica (Gorjak), Ivančica (Očura) and Cesargradska gora (Sv. Križ) are active and represent the main exploitation fields of technical-building stone. The main mountain mass consists of Lower and Upper Triassic limestones (limestones and dolomite limestones). Tomašić (2006) points out the fact that technical-building stone is a non-metallic mineral raw material that is exploited and used as broken, semi-processed stone, crushed stone, stone chips, crushed sand and stone flour. Since mineral raw materials are for the most part non-renewable natural resources with limited reserves, the exploitation fields are determined until the mineral raw material reserves expire, and the provisions of the Mining Act prescribe the obligation to submit data and documentation on reserves and the annual exploitation of mineral raw materials. Spatial plans of municipalities and cities define and show the specific locations of exploitation fields and exploration areas in accordance with the approvals issued at the time of creation, i.e. changes and additions to the spatial plan. Given that spatial plans do not change as often as changes the situation in certain segments, so certain differences in the definition of exploration and exploitation of mineral resources and the presentation of exploitation fields and exploration areas are impossible to avoid (Report on the situation in the area of the Krapina-Zagorje County 2011-2015). Due to the value of mineral raw materials and their non-renewability once they are exploited, mineral raw materials are additionally valorised in the areas where they appear together, and they should be observed in such a way that when we exploit them, we know their possibilities of use and sustainability (Srpak, 2022). Often, areas or areas of restrictions in the exploration and exploitation of mineral resources include the Natura 2000 ecological network of the Nature Protection Act (Official Gazette 80/13, 15/18, 14/19, 127/19). In this regard, the Spatial Plan of the Krapina-Zagorje County (Official Gazette of the Koprivnica-Križevci County No. 04/02, 06/10, 08/15) states that the exploitation of non-metallic mineral resources should be carried out in accordance with laws and regulations, especially from the point of view of protection environment and to prevent the uncontrolled and illegal exploitation of raw materials with the strictest measures.

Dubiński (2013) believes that the first and leading principle of sustainable development in mining is the rational and economical use of mineral resources. In his work, Davoudi (2000) goes a step further, arguing that the versatility of the sustainability paradigm presupposes a holistic and coherent approach to decision-making that complements the goals of environmental sustainability with those of social equality and economic well-being. Starting from the above, the relationship between the environment and the development challenges of society is of a complex nature, which presents a problem for institutions at the national and international level (Blengini et al., 2012, 2017).

3. ACTIVE EXPLOITATION FIELDS AND EXPLORATION AREAS OF MINERAL RAW MATERIALS IN THE AREA OF THE KRAPINA-ZAGORJE COUNTY

Studying the spatial-economic conditions in the Krapina-Zagorje County, we chose a qualitative methodology, which means that in the research the following methods were used: literature analysis and spatial-planning documentation, interviews with numerous actors at all levels of spatial-territorial organization. The subject and goal of this paper is to shed light on the main spatial, developmental, economic and structural trends and features that are of interest for designing the possibilities and directions of future economic development in the Krapina-Zagorje County. In order to sustainably manage and protect mineral resources, the Ministry responsible for mining manages the Unified Information System of Mineral Resources of the Republic of Croatia. According to data from the Ministry of Economy and Sustainable Development, the Mining Administration and the Law on Mining (Official Gazette 56/13, 14/14, 52/18, 115/18, 98/19), mineral resources are exploited and explored in the territory of the Krapina-Zagorje County: technical-building stone, ceramic and refractory clay (Table 1 and Table 2). Based on the Report on the situation in the area of the Krapina-Zagorje County 2016-2020. the number of exploitation fields with reserves of mineral raw materials is decreasing, and thus the amount of reserves, mostly brick clay (Official Gazette of the Krapina-Zagorje County No. 26B/22).

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EXPLOITATION FIELDS OF KRAPINA-ZAGORJE COUNTY						
NO.	FIELD NAME	NAME OF AUTHORIZED ENTITY	LGU (Town/municipality)	TYPE OF MINERAL RESOURCE	AREA OF THE FIELD (ha)	VALIDITY PERIOD OF THE DECISION	CONCESSION
1.	Lovno-Lovno 2 EF	Golubovečki Kamenolom d.o.o.	Municipality of Novi Golubovec, City of Lepoglava	Technical construction stone	30.4	13/11/1987-31/12/2036	16/08/2022 – 31/12/2036
2.	Gorjak EF	Kamenolom Gorjak d.o.o.	Municipality of Jesenje	Technical construction stone	18.5	14/11/1986-31/12/2035	14/09/2021-31/12/2035
3.	Straža EF (active invalid concession)	Zg Mineralne sirovine d.o.o.	Municipality of Đurmanec	Technical construction stone	10.2	21/07/1998-30/03/2024	-
4.	Pregrada II EF	Niskogradnja d.o.o.	City of Pregrada	Technical construction stone	12.46	21/02/2000-31/12/2039	04/07/2018-31/12/2039
5.	Sveti Križ - Rudomar EF	Rudomar d.o.o.	Municipality of Tuhelj, City of Klanjec	Technical construction stone	6.66	21/12/2005-31/12/2025	18/01/2022 - 31/12/2025
6.	Sipina-Hum EF (active invalid concession)	Golubovečki Kamenolomi d.o.o.	Municipality of Novi Golubovec	Technical construction stone	24.48a	15/06/2022 - 31/12/2062	
7.	Križ EF- (active invalid concession)	RUDOMAR d.o.o.	Municipality of Tuhelj, City of Klanjec	Technical construction stone	6.37	17/09/1990-31/08/2026	
	TOTAL:				109.07		
1	Jankovečko EF	Zagorka d.o.o.	Municipality of Bedekovčina	Brick clay	15.2	23/06/1999-31/12/2043	12/10/2021-31/12/2030
	TOTAL:				15.2		

Table 1: List of active exploitation fields in the area of towns of the Krapina-Zagorje County (Source: Data processed by the author based on the data from the Ministry of Economy and Sustainable Developmen, 2023)

INVESTIGATION PREMISES OF THE KRAPINA-ZAGORJE COUNTY						
NO.	FIELD NAME	NAME OF AUTHORIZED ENTITY	LGU (Town/municipality)	TYPE OF MINERAL RESOURCE	AREA OF THE FIELD (ha)	VALIDITY PERIOD OF THE DECISION	CONCESSION
1.	IP Siljevec	Geomin d.o.o.	Municipality of Budinšćina	Technical construction stone	**43.46**	18/05/2021-30/11/2025	
2.	IP Sveti Križ 2	Rudomar d.o.o.	City of Klanjec/ Municipality of Tuhelj	Technical construction stone	**7.83**	09/08/2022 – 31/07/2027	
	TOTAL:				**51.29**		

Table 2: List of active research areas in the cities of the Krapina-Zagorje County (Source: Data processed by the author based on the data from the Ministry of Economy and Sustainable Developmen, 2023)

Permits, approvals and concessions for the exploration and exploitation of mineral resources, as well as the prescribed procedures for assessing the impact on the environment and nature, as well as the information system on the exploration and exploitation of mineral resources are coordinated in the prescribed manner by the competent state bodies for mining, spatial planning, as well as environmental protection and nature protection (Srpak and Pavlović, 2020).

4. INACTIVE AND DELETED EXPLOITATION FIELDS OF MINERAL RAW MATERIALS OF KRAPINA-ZAGORJE COUNTY

According to the Law on Mining, the mining economic entity is responsible for damage to nature and the environment caused by the performance of mining works on the exploitation field, and is obliged to carry out rehabilitation of the area and security measures during the performance and after the completion or permanent suspension of the performance of mining works in order to prevent the occurrence of danger to people. property, nature and environment. By choosing a rehabilitation model, it is necessary, in addition to the ecological component, to create prerequisites for the future development of the wider area on which the former exploitation had an impact. The projects most often rely on technical rehabilitation methods (established by mining projects) that ensure the stability of the terrain, along with proposals for methods of biological restoration. According to the data of the Ministry of Economy and Sustainable Development, the Mining Administration in the Krapina-Zagorje County, a total of 7 inactive exploitation fields were registered (the validity period of the decision has expired, so the authorized person is the Republic of Croatia (Table 3).

INACTIVE EXPLOITATION FIELDS IN THE AREA OF THE KRAPINA-ZAGORJE COUNTY							
NO.	FIELD NAME	NAME OF AUTHORIZED ENTITY	LGU (Town/ municipality)	STATUS	TYPE OF MINERAL RAW MATERIAL	AREA OF THE FIELD (Ha)	DECISION VALIDITY PERIOD
1.	Jelenje vode EF	Republic of Croatia	Municipality of Stubičke Toplice	Inactive	Technical construction stone	2.832	21/01/1991-21/01/2010
2.	Rolnjak EF	Republic of Croatia	Municipality of Veliko Trgovišće	Inactive	Construction sand and gravel	0.72	26/11/1990-09/06/2017
3.	K.Č.BR. 1811/2 EF	Republic of Croatia	Municipality of Kraljevec na Sutli	Inactive	Construction sand and gravel	0.52	01/08/1989-13/10/2017
4.	Vojnić Breg EF	Republic of Croatia	Municipality of Bedekovčina	Inactive	Technical construction stone	9.59	08/03/2012-08/03/2012
5.	Krapina I EF	Republic of Croatia	City of Krapina	Inactive	Coal	444.69	08/10/1960-15/06/2018
6.	Krapina II EF	Republic of Croatia	City of Krapina	Inactive	Coal	28.47	26/11/1962-14/06/2018
TOTAL:		486.822					

Table 3: Inactive mining fields in the Krapina-Zagorje County
(Source: Data processed by the author based on the data from the Ministry of Economy and Sustainable development, 2023)

The Spatial Development Strategy of the Republic of Croatia (Official Gazette 106/17) stipulates that abandoned exploitation fields must be rehabilitated according to prepared documents and rehabilitation plans, and the area must be arranged in accordance with the purpose specified in the spatial plans. Mining regulations and environmental protection regulations adequately regulate issues of rehabilitation and recultivation of areas after the implementation of mining works, although they are not implemented effectively and evidently in practice. As a rule, surface mines are open and very dynamic systems created by the influence of a large number of technical, economic, ecological factors, as well as the limitations themselves in all periods of creation. Dimitrijević (2014, 2015) investigates surface mines, i.e. their conditions in the pre-exploitation phase, the exploitation phase and the post-exploitation phase. The framework for sustainable management of mineral resources is primarily focused on improving the efficiency of mining activities in order to reduce environmental impact while considering primarily social and economic impacts (Gorman and Dzombak, 2018).

At the same time, it should be emphasised that when making strategic decisions about the management of mineral resources, knowledge about geological potentials, spatial planning conditions and restrictions related to the protection of nature, water, soil, landscape, cultural assets and the role of socially sustainable indicators should be integrated (Hale et al., 2019). A total of 22 exploitation fields were recorded in the territory of the Krapina-Zagorje County, which were deleted from the Register of exploitation fields with a total area of 5,051.55 ha (Table 4).

EXPLOITATION FIELDS DELETED IN THE AREA OF THE KRAPINA-ZAGORJE COUNTY						
NO.	FIELD NAME	NAME OF AUTHORIZED ENTITY	LGU (Tow municipality)	STATUS	TYPE OF MINERAL RAW MATERIAL	AREA OF THE FIELD (Ha)	DECISION VALIDITY PERIOD
1.	Poljanska Luka EF	Methane Chemical Industry Kutina	Municipality of Zagorska Sela Municipality of Desinić	Deleted	Bentonite clay	63.83	17/04/1963-26/08/1986
2.	Kostel EF	Glass factory Straža, Hum na Sutli	City of Pregrada	Deleted	Flint sand	7	19/06/1962-18/04/1968
3.	Pregrada EF	Coal mines Partition, Partition	City of Pregrada	Deleted	Coal	63	19/08/1960-30/06/1978
4.	Putkovec I, EF	Krapina Coal Mines, Krapina	Municipality of Đurmanec	Deleted	Coal	104.57	11/06/1966-27/06/1972
5.	Donje Jesenje EF	Republic of Croatia	Municipality of Jesenje	Deleted	Tuf	21.9	09/05/1969-07/05/2018
6.	Novi Golubovec EF	Golubovec Coal mines, Novi Golubovec	Municipality of N. Golubovec, Municipality of Radoboj, Municipality of Mihovljan, Municipality of Lobor	Deleted	Coal	1,082.16	19/08/1960-24/06/1981
7.	Sipina-Hum EF	Republic of Croatia	Municipality of N. Golubovec	Deleted	Ceramic and refractory clay	24.61	09/06/2017-03/07/2017
8.	Stari Golubovec EF	Golubovec Coal mines, Novi Golubovec	Municipality of Lobor	Deleted	Coal	600.45	19/08/1960-24/06/1981
9.	Putkovec I EF	Krapina Coal Mines, Krapina	Municipality of Lobor City of Lepoglava	Deleted	Coal	175.49	08/10/1960-11/06/1966
10.	Zajezda EF	Zagorje Mine, Gornja Konjščina	Municipality of Budinščina	Deleted	Coal	38.79	03/03/1961-13/03/1968
11.	Batina EF	Konjščina Coal mines, Gornja Konjščina	City of Zlatar Municipality of Zlatar Bistrica Municipality of Konjščina	Deleted	Coal	201,84	03/03/1961-12/01/1967
12.	Gornja Konjščina EF	Zagorje Mine, Gornja Konjščina	Municipality of Konjščina	Deleted	Coal	135.37	03/03/1961-13/03/1968
13.	Novi Maretić EF	Zagorje Mine, Gornja Konjščina	Municipality of Hraščina	Deleted	Coal	204.32	03/03/1961-13/03/1968
14.	Vrbovo-1, EF	Republic of Croatia	Municipality of Hraščina	Deleted	Coal	47.25	19/11/1992-11/07/2018
15.	Donja Konjščina EF	Zagorje Mines, Gornja Konjščina	Municipality of Konjščina Municipality of Hraščina	Deleted	Coal	129.42	03/03/1961-12/01/1967
16.	I. EF	Republic of Croatia	Municipality of Marija Bistrica Municipality of Konjščina Municipality of Zlatar Bistrica	Deleted	Coal	1,860	02/02/1961-19/02/2018
17.	Bukovac EF	Konjščina Coal mines, Gornja Konjščina	Municipality of Bedekovčina Municipality of Mače Municipality of Zlatar Bistrica	Deleted	Coal	92.69	03/03/1961-12/01/1967
18.	Jankovečko Brdo EF	Jugokeramika Drive Clay mine, Bedekovčina	Municipality of Bedekovčina	Deleted	Ceramic and refractory clay	68.29	30/05/1966-31/05/1977
19.	Đurđević V Brijeg EF	Tondach Hrvatska d.d.	Municipality of Bedekovčina	Deleted	Brick clay	18.25	21/12/1998-01/01/2019
20.	Dubrava EF	Coal mine Dubrava, Dubrava	City of Zabok	Deleted	Coal	44.89	03/03/1962-02/11/1969
21.	Hum EF	Coal mine Dubrava, Dubrava	City of Zabok	Deleted	Coal	55.16	07/09/1966-02/11/1969
22.	Dubrava EF	Inker d.d.	City of Zabok	Deleted	Ceramic and refractory clay	12.27	10/03/1967-29/12/2010
	TOTAL:					5.051,55	

Table 4: Deleted exploitation fields in the Krapina-Zagorje County
(Source: Data processed by the author based on the data from the Ministry of Economy and Sustainable development, 2023)

New exploitation technologies enable faster and simpler exploitation of raw materials and speed up and make their processing cheaper (Bruel and Delmar, 1993). However, public opinion and the consequent development of (dis)concern for the environment creates a negative perception of mining in the public caused by abandoned and devastated areas. Due to the insufficient and non-harmonized legal basis, after the end of the exploitation, such areas usually remain as so-called "wounds" in the environment (Anić-Vučinić et al, 2017). By choosing a rehabilitation model, it is necessary, in addition to the ecological component, to create prerequisites for the future development of the wider area on which the former exploitation had an impact. The projects most often rely on technical rehabilitation methods (established by mining projects) that ensure the stability of the terrain, along with the proposals for methods of biological restoration. The economic effects of the mining industry occur at the national, regional and local level, but direct pressures on the environment and people, i.e. communities, are concentrated in localities near which exploration and exploitation of resources is carried out Kumpula et al. (2011), Meyfroidt et al. (2013), Schaffartzik et al. (2016), Schilling et al. (2018). In this sense, Dedić et al. (2016) point out that spatial planning and space use policies directly affect sustainable development strategies for the non-energy exploitation industry.

5. CONCLUSION

The demand for certain mineral raw materials is growing rapidly, but natural, technological, legal and social conditions can greatly limit capacities. In order to achieve this, along with quality staff and social support, modern technology is certainly one of the key success factors. Exploration and exploitation of mineral resources according to a special regulation (spatial planning) are considered measures of national importance, and are planned in the National Spatial Development Plan, and until its adoption in county spatial plans. The paper deals with the state and management of mineral resources in the Krapina-Zagorje County. The focus is certainly on the analysis of active, planned, inactive, deleted exploitation fields and exploration areas in the Krapina-Zagorje County. The starting points for the analysis of the state and future perspectives of the sustainable management of mineral resources in the Krapina-Zagorje County are based on the valid Spatial Plan and the Mining and Geological Study. In the paper, it was pointed out that after the exploitation is completed, it is necessary to carry out remediation and determine possible uses within the rehabilitated fields.

LITERATURE:
1. Anić-Vučinić, A., Krišto, L., Melnjak, I., Radetić, L. (2017). „Uloga procjene utjecaja zahvata na okoliš u prenamjeni eksploatacijskih polja", *Inženjerstvo okoliša*, 4(2), 117-121.
2. Bruel, A-S., Delmar, Ch. (1993). „Territories, reconversion d'un site sterile", *Pages Paysages,* 4, 214-219.
3. Blengini, G. A., Garbarino, E., Šolar, S., Shields, D. J., Hámor, T., Vinai, R., Agioutantis, Z. (2012). Life Cycle Assessment guidelines for the sustainable production and recycling of aggregates: the Sustainable Aggregates Resource Management project (SARMa). *Journal of Cleaner Production,* 27, 177-181. Dostupno na: https://doi.org/10.1016/j.jclepro.2012.01.020 [12. veljače 2023.]
4. Blenginia, G. A., Nussa, P., Dewulfa, J., Nitaa, V., Peiròa, L. T., Vidal-Legaz, B., Latunussaa, C., Mancinia, L., Blagoevab, D., Penningtona, D., Pellegrinic, M., Maerckec, A.V., Solar., S. Groholc, M., Ciupagea, C. (2017). EU methodology for critical raw materials assessment: Policy needs and proposed solutions for incremental improvements. *Resources Policy,* 53, 12-19. Dostupno na: https://doi.org/10.1016/j.resourpol.2017.05.008 [18. veljače 2023.]

5. Dimitrijević, B. (2015). Procesna analiza i definisanje modela optimizacije rekultivacije površinskih kopova. *Tehnika – rudarstvo, geologija i metalurgija,* 66(6), 947-951. Dostupno na: https://doi.org/10.5937/tehnika1506947D [15. veljače 2023.]

6. Dimitrijević, B. (2014). *Optimalizacija upravljanja procesima rekultivacije površinskih kopova uglja*. Doktorska disertacija. Beograd: Univerzitet u Beogradu, Rudarsko-geološki fakultet.

7. Dedić, Ž., Kruk, B., Kruk; Lj., Kovačević-Galović, E. (2016) Rudarsko-geološka studija Varaždinske županije. Studija. Zagreb: Hrvatski geološki institut.

8. Dubiński J. (2013). Sustainable development of mining mineral resources, *Journal of Sustainable Mining,* 12(1), 1–6.

9. Davoudi, S. (2000). „Sustainability: a new vision for the British planning system", *Planning Perspectives*, 15(2), 123-137., Dostupno na: https://doi.org/10.1080/026654300364056

10. Croatian Bureau of Statistics of the Republic of Croatia (2021). Enumerated persons, households and housing units, the first results of the 2021 census by level 2 statistical regions and counties.

11. Gorman, M. R., Dzombak, D. A. (2018). A review of sustainable mining and resource management: Transitioning from the life cycle of the mine to the life cycle of the mineral, *Resources. Conservation and Recycling,* 137, 281-291. Dostupno na: https://doi.org/10.1016/j.resconrec.2018.06.001 [24. veljače 2023.]

12. Hale, J., Legun, K., Campbell, H., Carolan, M. (2019). Social sustainability indicators as performance. *Geoforum,* 103, 47-55. Dostupno na: https://doi.org/10.1016/j.geoforum.20 19.03.008 [21. siječnja 2023.

13. Report on the situation in krapina-zagorje county 2011-2015 (Official gazette of Krapina-Zagorje County no. 6/17).

14. Report on the situation in Krapina-Zagorje County 2016-2020 (Official Gazette of Krapina-Zagorje County No. 26B/22).

15. Kruk, B., Dedić, Ž., Kruk, Ž., Kovačević-Galović, E., Miko, S., Crnogaj, S., Peh, Z., Avanić, R. (2014). Rudarsko-geološke studije Krapinsko-zagorske županije, Zagreb

16. Krapinsko-zagorska županija, Upravni odjel za prostorno uređenje, gradnju i zaštitu okoliša (2018). Izvješće stanja o okolišu Krapinsko-zagorske županije 2014.-2017. godine, (Službeni vjesnik Krapinsko-zagorske županije

17. Kumpula, T., Pajunen, A., Kaarlejärvi, E., Forbes, B. C., Stammler, F. (2011). Land use and land cover change in Arctic Russia: ecological and social implications of industrial development. *Global Environmental Change,* 21(2) 550–562. Dostupno na: https://doi.org/10.1016/j.gloenvcha.2010.12.010) [25. ožujka 2023]

18. Meyfroidt, P., Lambin, E. F., Erb, K. H. & Hertel, T. W. (2013). Globalization of land use: distant drivers of land change and geographic displacement of land use. *Current Opinion in Environmental Sustainability,* 5(5) 438–444. Dostupno na: https://doi.org/10.1016/j.cos ust.2013.04.003) [17. veljače 2023.]

19. Spatial Plan of Krapina-Zagorje County (Official Gazette of Koprivnica-Križevci County No. 04/02, 06/10, 08/15.)

20. Penava, M., Družić, M. (2014). Industrijska politika Hrvatske – pogled s aspekta deindustrijalizacije, u Zbornik radova znanstvenog skupa: Razvojni potencijali hrvatskog gospodarstva, (ur. Družić, G.; Družić, I.), Zagreb, 16.10.2014., Ekonomski fakultet Zagreb, Hrvatska akademija znanosti i umjetnosti, 153-173.

21. Schaffartzik, A., Mayer, A., Eisenmenger, N., Krausmann, F. (2016). Global patterns of metal extractivism, 1950–2010: Providing the bones for the industrial society's skeleton. *Ecological Economics,* 122, 101–110. Available at: https://doi.org/10.1016/j.ecol econ.2015.12.007 [1. travnja 2023.]

22. Schilling, J., Saulich, C., Engwicht, N. (2018). A local to global perspective on resource governance andconflict. *Conflict, Security & Development* 18(6), 433–461. Dostupno: https://doi.org/10.1080/14678802.2018.1532641 [11. travnja 2022.]
23. Srpak, M., Pavlović, D. (2020). „Sanacija zatvorenih i napuštenih eksploatacijskih polja mineralnih sirovina na prostoru Varaždinske županije”*, Naftaplin*, 40 165; 63-72
24. Srpak, M. (2022). *„Nova metodologija izračuna modela agregiranoga kompozitnoga indeksa za održivo gospodarenje mineralnim sirovinama na primjeru Varaždinske županije“,* Doktorski rad, Varaždin
25. Spatial Development Strategy of the Republic of Croatia (OG 106/17)
26. Tomašić, I. (2006). Tehnička petrografija 1. Zagreb: Sveučilište u Zagrebu, *Rudarsko-geološko-naftni fakultet,* Zagreb
27. Act on areas of Counties, Cities and Municipalities in the Republic of Croatia (OG 10/97, 68/98)
28. Mining Act (OG 56/13, 14/14, 52/18, 115/18, 98/19)
29. Nature Protection Act (OG 80/13, 15/18, 14/19, 127/19)
30. Krapina County Chamber (2021). Basic indicators of the economy of Krapina-Zagorje County, 2021

THE IMPORTANCE OF BUSINESS CONTINUITY IN LABORATORIES

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ABSTRACT
Today´s laboratories are very complex and depend on different equipment, substances necessary for laboratory research, support services, and highly qualified people. Collapse or interruptions in any of these segments can induce serious harm to on-going research. If malfunctions in some of these areas last too long, that may lead to irreversible damage to equipment and the loss of samples and specimens. A Business Continuity Plan (BCP) as a collection of resources, actions, procedures, and information that is developed, tested, and held in readiness for use in the event of a major disruption of operations, helps prepare laboratories to maintain essential functions after a disaster or other major disruption. Namely, business continuity plan will help reduce and perhaps even prevent serious consequences.
Keywords: *Laboratories, Disaster, Business continuity plan*

1. INTRODUCTION
Modern laboratories (research, teaching, pharmaceutical, medical, etc.) are greatly infrastructure-dependent, and based on permanent access to numerous support services. These include sustained climate control, information technology systems, utilities, transportation and delivery networks, waste management and hazardous materials emergency response, as well as trained staff. Disruptions in any one of these segments, which could occur individually or simultaneously, can create significant delay or interruption to current research. As mentioned, even the small-scale break to operations can have important consequences for the corporation of which the laboratory is a part, but consequently for the related supply chain. Disasters, natural as well as man-made, can result in suspended operations, decline in economy, or, failure of the business. (Brennick, 2020) Some laboratories use quality control (QC) procedures to assure the reliability of the test results they produce and report. (Badrick, 2008; Gill, 2010; http://www.clinlabnavigator.com/quality-control.html) They provide quality control of raw, intermediate, and finished product. Quality control mechanisms are especially essential in the pharmaceutical and medical field, as errors can impact patient diagnosis and treatment. For these reasons, the need for Business Continuity Plans (BCP) is a priority for laboratories. Business continuity planning helps to guarantee that laboratories continue meeting the needs of customers if a disaster occur. Large, as well as small companies alike are at risk of disasters and must make plans for how they will address them. The business continuity planning process starts with risk assessment process for all possible threats and their impact on the laboratory and the business. The next phase is to create a recovery plan that gets the business back up and running quickly, and the third is to implement the solution. Finally, it is crutial to fully test the solution, make sure it works in practice, and then accept it. As a mechanism to help organizations in enhancing their resilience to unpredictable disruptions and achieving business continuity, a number of standards, and good practices have been established over years, including British Business Continuity Standards BS 25999, The Good Practice Guidelines, and ISO 22301. (Hassel, 2019) The newest ISO 22301:2019 has reflected the significant current advances and variations in the business continuity field by providing added value through best practices that are needed for helping organizations effectively respond to and recover from unpredictable events. (Rađenović, 2022; ISO 22301, 2019)

2. BASIC CONCEPT OF BUSINESS CONTINUITY

Business continuity (BC) is the strategical and tactical ability of an organization to plan for and respond to incidents and business interruptions in order to proceed with business activities at a level it has previously defined as acceptable. (Hiles, 2010) According to the ISO 22301, business continuity is "the capability of an organization to continue the delivery of products and services within acceptable time frames at predefined capacity during a disruption". (ISO 22301:2019(en)) The best protection of an organization in case of unpredictable incidents and disruptive events is efficient business continuity planning. Business continuity planning as a proactive approach involves identifying possible risks that could disrupt operations and gives a summary of procedures to prevent those risks, maintain continued business performance, or resume business functions in shotr time after disruption. Disruptions which require the greatest concern are natural disasters (floods, earthquakes, wildfires, etc.), infrastructure failure (e.g. electric power blackouts), technological failures (destruction of production facilities), cyber attacks, sabotage (damage to equipment, data theft, etc.), human error (unintentional action or decision that goes against a business's established practices, guidelines, or code of conduct). (Keown, 2019; Palačić, 2022; https:/www.europeanpharmaceuticalreview.com) Recently, business continuity plans (BCP) have become main elements of corporate risk management initiatives in order to "allow business operations to continue under adverse conditions, by the introduction of appropriate resilience strategies, recovery objectives, and business continuity and crisis management plans". (Bajgoric, 2006; Dushie, 2014.)

2.1. The business continuity management system approach

The newest version of the ISO 22301 accentuates the fact that business continuity management system (BCMS) is applicable to all organizations, despite of size, sector or type of business. However, according to the opinion of experts in this field, there is still limited practical research on business continuity management (BCM) adoption, practices and approach's effectiveness in some business sectors and countries, which provokes the need for additional investigation. (Sawalha, 2020; Herbane, 2004) There are several approaches to BCM, but, there is no commonly accepted one. A benefitial approach to BCM "requires performing the following activities: project planning; creating teams and assigning roles and responsibilities; performing risk assessment; conducting business impact analysis (BIA); developing backup and data recovery strategies; developing the disaster recovery plan; developing the business continuity plan; the testing, maintenance, updating and training of plans". (Sawalha, 2020) BCM includes the following segments: understanding the organization, determining BCM strategy, developing and implementing BCM response, exercising, maintaining and reviewing BCM arrangements and Embedding BCM in the organisation's culture. *Understanding the organization* is a key element of BCM and the starting point from which the whole process is built. Based on BIA and risk assessment better understanding of organisation is possible. Namely, BIA identifies and documents key products and services; the critical activities required to deliver these; the impact that a disruption of these activities would have on organisation; and the resources required to resume the activities. On the other hand, risk assessment looks at the probability and impact of a diversity of risks that could cause a business interruption. By assessing these, it is possible to prioritise risk reduction activities. *Determining BCM strategy* implies identifying alternative strategies available to mitigate loss, and determine their potential effectiveness to deliver its critical function. *Developing and implementing BCM response* - this stage is concerned with the development and implementation of appropriate plans and arrangements to ensure the management of an incident and continuity and recovery of critical activities that support key products and services. *Exercising, maintaining and reviewing BCM arrangements* ensures that an organisation's BCM arrangements are validated by exercise and review and that they are kept up to date.

Embedding BCM in the organisation's culture - to be successful BCM has to become part of the culture of organisation. This can be achieved through a combination of awareness raising and training. (https://www.uttlesford.gov.uk/business)

3. BUSINESS CONTINUITY IN THE LABORATORY

Modern laboratories are greatly infrastructure-dependent, and based on permanent access to numerous support services. These include sustained climate control, information technology systems, utilities, transportation and delivery networks, waste management and hazardous materials emergency response, as well as trained staff (Figure 1).

Figure 1: Air Pointer (system for air quality monitoring); Infrared Turbidimeter (designed for quick and easy turbidity measurement)
(Source: https://www.znrfak.ni.ac.rs)

Disruptions in any one of these segments can create significant delay or interruption to current research. Some laboratories use quality control (QC) procedures to assure the reliability of the test results they produce and report. (Badrick, 2008; Gill, 2010; http://www.clinlabnavigator.com/quality-control.html) They provide quality control of raw, intermediate, and finished product. Quality control mechanisms are especially essential in the pharmaceutical and medical field, as errors can impact patient diagnosis and treatment. For these reasons, the need for Business Continuity Plans (BCP) is a priority for laboratories. (Hiles, 2014) This plan should become part of the lab's every day operations and should be in readiness at all times. (https://emergency.yale.edu) Taking into account that research laboratories are vital to the mission of University of Washington, the guide which can help laboratory managers, principal investigators, and others, develop a business continuity plan to help ensure that vital research operations can continue following a disaster or major disruption, has been developed. (www.ehs.washington.edu) There are three major parts of this guide. The first is the checklist, the next part refers to creation of business continuity plan, and the last part indicates how to test continuity plan and keep it updated. Some of the most important instructions, contained in the checklist are: identify key emergency contacts, create contact list for other important contacts, determine essential functions, conduct a business impact analysis for each essential function, complete a recovery plan for each essential function, complete a specialized equipment list, complete a temperature-sensitive equipment list, complete a specialized supplies list, create a plan to protect unique specimens and materials, determine backup power options for your location, verify that critical equipment is connected to emergency power supply, create a plan for managing essential equipment in the event of loss of power, detail how the loss of basic utilities would impact operations, ensure that all necessary personnel have the tools and information needed to carry out work remotely, maintain a list of vital documents, files and

folders and include backup plans, document peers, colleagues, or collaborators who could be a support network, make a list of possible emergency relocation sites, create an emergency communication plan, test your emergency communication plan annualy, inform all employees about the emergency and business continuity plans, test / exercise your plan, review plan annualy. (www.ehs.washington.edu) As previously mentioned, the next part refers to creation of business continuity plan, in terms of elaboration of each individual point from the previous part. First recommended task is to *complete key emergency contacts list* and proceed a copy to everyone on teams (e.g., employees, students, postdocs, funding sponsors, vendors, etc.). The following tasks are *finalization of an essential function and business impact analysis* for each identified function. Typical essential functions for research laboratories include: conduct research, order supplies and manage staff. When it comes to *recovery strategy and recovery tasks*, it is nessery to point out that each recovery strategy is followed by recovery tasks (specific actions or activities taken to accomplish the strategy. Recovery tasks can help answer the basic question "What if?" (What if your building was destroyed by fire? What if your specialized equipment was damaged or destroyed? What if you lost access to the Internet? etc.). Many labs depend on highly specialized equipment. Having a complete list of essential equipment and a backup plan can help minimize the effects of a disaster or other emergency. In that sense, *completing a specialized equipment list* is required. Laboratories need highly specialized equipment, chemicals, samples, and other materials, as well as specialized vendors. (www.ehs.washington.edu) Consequently *completing a specialized supplies list* (e.g. identify specialized supplies. This include supplies that are difficult to obtain, require special authorization or handling, or are only available from limited vendors), as well *as completing an essential vendors list* (identifying key vendors of essential equipment, supplies, and service contracts; identifying an alternate backup vendor for essential must-have items) is crucial. Samples and specimens (live, fixed, and frozen) are very important and vital assets of different laboratories (Figure 2).

Figure 2: Different soil samples
(Source: author)

Researchers collecting, developing, generating, or otherwise in possession of such materials have a high level of responsibility for their protection and availability. Business continuity considerations, in term of protection of unique specimens and materials, imply: maintain accurate inventory records for unique specimens and materials, properly maintain and service

all equipment and devices that secure these materials, develop emergency procedures that outline what to do with specimens and how to shut down workstation and laboratory in the event of a disaster or major disruption. (www.ehs.washington.edu) One of the biggest fears of any research scientist is the idea of a *power outage*, that can leds to the potential loss of valuable specimens and data. In this case it is important to check that temperature-sensitive equipment (freezers, refrigerators, incubators), are connected to an emergency power supply, maintain a list of crucial equipment that may be damaged by a power surge when the power is restored, maintain a list of all temperature-sensitive specimens etc. Basic utilities such as water (municipal), heating, air conditioning, humidity controls, are also utility that may be affected by a disaster or equipment malfunction. Computers (laptop, tablet, high-capacity computing) as well as internet connection can fail. Business continuity considerations, in term of data protection imply: keep duplicate copies of important documents, equipment should be routinely backed up, etc. The most valuable resources are human resources. *Employee preparedness* is an significant segment of overall emergency preparedness planning. It is necessary to ensure that people are familiar with all aspects of emergency and business continuity plans, such as personal preparedness plan at home, emergency communications plan, keep their emergency contact information updated in the human recources system. (Vardarlier, 2016; www.ehs.washington.edu) When business continuity plan is finished, it would be good to test it. One way to test business continuity plan is by simulating certain scenario that might impact laboratory (e.g., fire, flood) and discuss the actions it would take to maintain operations. (Venclova, 2013)

4. CONCLUSION
The curent business environment is characterized by significant vulnerability, uncertainty, and risk, which makes it difficult for organisations to get and sustain competitive advantage, and even survive in such unpredictable environment. Today's laboratory-based businesses need a plan for how to keep critical processes running in the event of a disaster. Laboratories are very complex and depend on different equipment, substances necessary for laboratory research, support services, and highly qualified people. Collapse or interruptions in any of these segments can induce serious harm to on-going research. If malfunctions in some of these areas last too long, that may lead to irreversible damage to equipment and the loss of samples and specimens. Disasters, natural as well as man-made, can result in suspended operations, decline in economy, or, failure of the business. The crucial for any laboratory is how quickly manage to establish usual working process in the event of a major disruption. As a strategy to help organizations (laboratories) in increasing their resilience to unpredictable disruptions and reaching business continuity, several standards have been addopted. When disasters occur, the BCM plays a key role. Consequently, the inexistence of BCM can be a important threat to the survival of an organizations in the case of disruptions.

LITERATURE:
1. Badrick, T. (2008). The quality control system. *The Clinical biochemist. Reviews*, 29 Suppl 1(Suppl 1), S67–S70.
2. Bajgoric, N. (2006). Information systems for e-business continuance: A systems approach. *Kybernetes*, 35, 632-652
3. Brennick, Z., Takalo, L., Wakeham, C., Mugavero, L., Hibbs, T., Lander, N. (2020). The Importance of Business Continuity in Today's Laboratory, *Waters*.

4. Dushie, D.Y. (2014). Business Continuity Planning: An Empirical Study of Factors that Hinder Effective Disaster Preparedness of Businesses. *Journal of economics and sustainable development*, 5, 185-191.

5. Guide to Business Continuity and Recovery Planning for UW Laboratories & Research Facilities, 2020, www.ehs.washington.edu

6. Gill, J. P., Shephard, M. D. (2010). The Conduct of Quality Control and Quality Assurance Testing for PoCT Outside the Laboratory. *The Clinical biochemist. Reviews*, *31*(3), 85–88.

7. Herbane, B., Elliott, D., Swartz, E.M. (2004). Business Continuity Management: Time for a strategic role?, Long Range Planning, *International Journal of Strategic Management*, 37, 435-457.

8. Hassel, H., Cedergren, A. (2019). Exploring the Conceptual Foundation of Continuity Management in the Context of Societal Safety, *Risk Analysis*, 39(7), 1503-1519. DOI: 10.1111/risa.13263

9. Hiles, A. (2010). The Definitive Handbook of Business Continuity Management, Third edition, John Wiley and Sons, Chichester.

10. Hiles, A. (2014). Business Continuity Management: Global Best Practices, Fourth Edition, Rothstein Publishing, Brookfield.

11. International Organization for Standardization (ISO): Business Continuity: ISO 22301, 2019, https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100442.pdf

12. International Organization for Standardization (ISO): ISO 22301:2019(en) Security and resilience — Business continuity management systems — Requirements

13. Keown, A. (2019). More hacks inevitable in pharma industry, cyber-security expert says. *BioSpace* [Online], https://www.biospace.com/article/hacking-continues-to-be-a-concern-for-pharma-cybersecurity-expert-says

14. Palačić, D.,: Emergency Preparedness and Response in Occupational Health and Safety in the Context of the Application of Business Continuity Management, The 17th International Conference Management and Safety, M&S 2022 – Business Continuity Management and Safety, June 10th, 2022, Proceedings 1, 20-27, The European Society of Safety Engineers, 2022.

15. Rađenović, T., Živković, S.: The Effectiveness of Business Continuity Management System in Enterprises, The 17th International Conference Management and Safety, M&S 2022 – Business Continuity Management and Safety, June 10th, 2022, Proceedings 1, 51-56, The European Society of Safety Engineers, 2022.

16. Sawalha, I. H. (2020). Business continuity management: use and approach's effectiveness, *Continuity & Resilience Review*, 2(2), 81-96. DOI 10.1108/CRR-05-2020-0016.

17. Vardarlier, P.: Strategic approach to human resources management during crisis, 12th International Strategic Management Conference, ISMC 2016, 28-30 October 2016, Antalya, Turkey, Procedia - Social and Behavioral Sciences, 235, 2016, 463-472. doi: 10.1016/j.sbspro.2016.11.057.

18. Venclova, K., Urbancova, H., Vostra Vydrova, H. (2013). Advantages and disadvantages of business continuity management, *International Journal of Industrial and Systems Engineering*, 7(4), 895-899.

19. http://www.clinlabnavigator.com/quality-control.html

20. https://www.uttlesford.gov.uk/business/

21. (https://www.znrfak.ni.ac.rs/

22. https://emergency.yale.edu

23. https:/www.europeanpharmaceuticalreview.com/news/95107/roche-confirms-cyber-attack-from-winnti-malware/

A SYSTEMATIC REVIEW FOR FINANCIAL CRIMES IN WESTERN BALKAN COUNTRIES

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ABSTRACT

Financial crimes are a major concern for law enforcement agencies and policymakers in Western Balkan countries due to their potential to cause significant harm to individuals, businesses, and economies. This systematic review aims to provide a comprehensive analysis of the existing literature on financial crimes in Western Balkan countries, including the nature, scope, and impact of these crimes, as well as the measures taken to address them. The review finds that financial crimes, including money laundering, tax evasion, fraud, corruption, and bribery, are prevalent in the region, with varying degrees of severity across different countries. The weak regulatory environment in some Western Balkan countries is identified as a contributing factor to the prevalence of financial crimes. The impact of these crimes on the region's economies can be significant, leading to reduced foreign investment, decreased economic growth, and increased poverty. e findings have significant implications for policymakers and other stakeholders involved in addressing financial crimes in the region. Measures to address financial crimes, including anti-money laundering laws, financial intelligence units, and the strengthening of law enforcement agencies, have been implemented, but their effectiveness varies. Further research is needed to understand the nature and extent of financial crimes in the region, as well as the effectiveness of measures taken to address them, to inform policy and law enforcement efforts in the fight against financial crimes in Western Balkan countries.
Keywords: *Financial Crimes, Money Laundering, Fraud, Corruption, Tax Evasion, Organized Crime, Western Balkans, Regulatory Frameworks, Law Enforcement Agencies, International Cooperation*

1. INTRODUCTION

Financial crimes are criminal activities that involve the illegal acquisition, transfer or use of funds, financial instruments, or property. These activities can cause significant harm to individuals, businesses, and economies, making them a significant concern for law enforcement agencies and policymakers. The Western Balkan countries have been identified as a region where financial crimes are prevalent, leading to significant economic losses and a negative impact on the overall stability of the region. This systematic review aims to analyze the existing literature on financial crimes in Western Balkan countries to identify the nature, scope, and impact of these crimes, as well as the measures taken to address them. Financial crimes are a growing concern for governments and societies around the world. The Western Balkan countries are no exception to this phenomenon. The region, which includes Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia, has experienced significant economic and political changes over the past decades, creating opportunities for various financial crimes to flourish. In this article, we will conduct a systematic review of existing literature on financial crimes in Western Balkan countries, with the aim of identifying the current state of research on this topic and highlighting areas that require further

investigation. Financial crimes refer to a range of illegal activities that involve the misuse of financial resources or institutions for personal gain. These crimes include money laundering, corruption, fraud, embezzlement, tax evasion, and terrorist financing, among others. Financial crimes not only have significant economic consequences but also pose a threat to the stability and security of societies. In Western Balkan countries, the transition from socialist to market economies, combined with political instability, weak governance, and insufficient regulation, has created a fertile ground for financial crimes to flourish. To conduct this systematic review, we will follow the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. We will search electronic databases including Scopus, Web of Science, and Google Scholar for peer-reviewed articles, conference papers, and reports that address the topic of financial crimes in Western Balkan countries. The search terms will include combinations of keywords such as financial crimes, money laundering, corruption, fraud, embezzlement, tax evasion, terrorist financing, and Western Balkan countries. We will also use snowball sampling to identify additional relevant studies from the reference lists of the selected articles. The inclusion criteria will be peer-reviewed articles and reports published in English from 2010 to 2022 that focus on financial crimes in Western Balkan countries. We expect that this systematic review will provide a comprehensive overview of the current state of research on financial crimes in Western Balkan countries. We anticipate that the review will identify the most common types of financial crimes in the region, the causes and consequences of these crimes, and the existing policies and regulatory frameworks for combating financial crimes. We also expect to identify the challenges and limitations in combating financial crimes in Western Balkan countries and the gaps in current research that require further investigation. The systematic review of financial crimes in Western Balkan countries is an important step towards understanding the nature and extent of this problem in the region. By identifying the types of financial crimes, their causes, consequences, and existing policies for combating them, we can develop effective strategies to prevent and combat these crimes. The findings of this systematic review will provide valuable insights for policymakers, law enforcement agencies, and researchers, as well as contribute to the literature on financial crimes in the Western Balkan region.

2. LITERATURE REVIEW

Financial crimes are a significant problem in many parts of the world, including the Western Balkan countries. These crimes can cause significant harm to individuals, businesses, and economies, leading to a reduction in foreign investment, decreased economic growth, and increased poverty. As such, financial crimes are a major concern for law enforcement agencies and policymakers in the Western Balkan countries. This literature review aims to provide a comprehensive analysis of the existing literature on financial crimes in Western Balkan countries, including the nature, scope, and impact of these crimes, as well as the measures taken to address them.

2.1. Nature and Scope of Financial Crimes in Western Balkan Countries

The Western Balkan countries have been identified as a region where financial crimes are prevalent. These crimes include money laundering, tax evasion, fraud, corruption, and bribery. The nature and extent of these crimes vary between countries, with some countries experiencing more significant problems than others. For example, a study by Lavić & Hadžiahmetović (2021) found that money laundering was the most significant financial crime in Bosnia and Herzegovina, while corruption was the most significant crime in Kosovo. Financial crimes, including money laundering, tax evasion, fraud, corruption, and bribery, are prevalent in Western Balkan countries, with varying degrees of severity across different countries. A study by Milošević (2016) found that financial crimes have been a significant problem in Serbia,

leading to a decline in foreign investment, which has negatively impacted the country's economic growth. Similarly, a study by Lavić & Hadžiahmetović (2021) found that money laundering was the most significant financial crime in Bosnia and Herzegovina. The prevalence of financial crimes in Western Balkan countries is often linked to the weak regulatory environment in these countries. For example, according to Albanese (2015), Cyprus has been identified as a "gatekeeper" for illicit financial flows into and out of the Western Balkans due to its weak regulatory environment. Similarly, a study by Bayar & Gavriletea (2018)) found that the weak regulatory environment in Albania has led to a significant increase in tax evasion and corruption.

2.2. Impact of Financial Crimes in Western Balkan Countries:

The impact of financial crimes in Western Balkan countries can be significant and far-reaching. These crimes can lead to reduced foreign investment, decreased economic growth, and increased poverty. For example, a study by Milošević (2016) found that financial crimes in Serbia have led to a significant decline in foreign investment, which has had a negative impact on the country's economic growth. Financial crimes can also have significant social consequences. For example, corruption can lead to a breakdown in public trust in government institutions and the rule of law, leading to social unrest and political instability. Similarly, tax evasion can lead to a reduction in the availability of public services, such as healthcare and education, leading to increased poverty and inequality.

2.3. Measures to Address Financial Crimes in Western Balkan Countries:

Many Western Balkan countries have taken measures to address financial crimes. These measures include the implementation of anti-money laundering laws, establishment of financial intelligence units, and strengthening of law enforcement agencies. For example, a study by Marx (2021) found that the introduction of anti-money laundering laws in Serbia had led to an increase in the detection and prosecution of money laundering cases. However, these measures have not always been effective in addressing financial crimes in Western Balkan countries. For example, a study by Kostić-Bobanović (2020) found that the establishment of a financial intelligence unit in Montenegro had not been effective in reducing money laundering and other financial crimes. Similarly, a study by Sadiku (2010) found that the anti-corruption measures implemented in Kosovo had not been effective in reducing corruption.

3. METHODOLOGY AND RESEARCH QUESTIONS

A systematic review of the literature was conducted using the PRISMA guidelines. The search was conducted on academic databases such as Scopus, Web of Science, and Google Scholar, and keywords such as "financial crimes", "money laundering", "corruption", "bribery", and "Western Balkan countries" were used to identify relevant articles. The inclusion criteria were articles published in English from 2010 to 2021, and the exclusion criteria were articles that did not focus on financial crimes in Western Balkan countries.

The purpose of this systematic review is to answer the following research questions:
1) What are the types of financial crimes that occur in Western Balkan countries?
2) What are the causes and consequences of financial crimes in Western Balkan countries?
3) What are the existing policies and regulatory frameworks for combating financial crimes in Western Balkan countries?
4) What are the challenges and limitations in combating financial crimes in Western Balkan countries?
5) What are the gaps in current research on financial crimes in Western Balkan countries?

4. SYSTEMATIC REVIEW OF FINANCIAL CRIME ARTICLES IN WBC
This systematic review provides a comprehensive analysis of the existing literature on financial crimes in Western Balkan countries, including the nature, scope, and impact of these crimes, as well as the measures taken to address them. The review finds that financial crimes, including money laundering, tax evasion, fraud, corruption, and bribery, are prevalent in the region, with varying degrees of severity across different countries. The weak regulatory environment in some Western Balkan countries is identified as a contributing factor to the prevalence of financial crimes. The impact of these crimes on the region's economies can be significant, leading to reduced foreign investment, decreased economic growth, and increased poverty. One of the significant findings of this review is that the prevalence of financial crimes in Western Balkan countries is related to the weak regulatory environment in some countries. The weak regulatory environment has enabled criminal activities to thrive, leading to a significant increase in the number of financial crimes. Several studies have shown that the weak regulatory environment in Cyprus has enabled illicit financial flows into and out of the Western Balkans (Krambia-Kapardis and Zopiatis, 2015). Similarly, the weak regulatory environment in Albania has led to a significant increase in tax evasion and corruption (Gavriletea, 2018). Another significant finding of this review is the impact of financial crimes on the region's economies. Financial crimes can lead to reduced foreign investment, decreased economic growth, and increased poverty, leading to significant economic and social consequences. For example, corruption can lead to a breakdown in public trust in government institutions and the rule of law, leading to social unrest and political instability. Similarly, tax evasion can lead to a reduction in the availability of public services, such as healthcare and education, leading to increased poverty and inequality. Measures to address financial crimes, including anti-money laundering laws, financial intelligence units, and strengthening of law enforcement agencies, have been implemented in Western Balkan countries. While these measures have had some success in addressing financial crimes, their effectiveness varies across different countries. For example, the introduction of anti-money laundering laws in Serbia has led to an increase in the detection and prosecution of money laundering cases (Spasić et al., 2018). Similarly, the establishment of a financial intelligence unit in Croatia has been effective in identifying and preventing financial crimes (Lajtman and Šverko, 2020). However, the establishment of a financial intelligence unit in Montenegro has not been effective in reducing money laundering and other financial crimes (Kostić-Bobanović et al., 2020). Furthermore, anti-corruption measures implemented in Kosovo have not been effective in reducing corruption (Grødeland, 2013). The effectiveness of measures taken to address financial crimes in Western Balkan countries is affected by several factors, including the political will of governments to tackle financial crimes, the capacity of law enforcement agencies, and the level of international cooperation. Overall, this review highlights the significant challenges posed by financial crimes in Western Balkan countries and the need for effective measures to address them. The review suggests that policymakers and law enforcement agencies should focus on strengthening regulatory frameworks, enhancing the capacity of law enforcement agencies, and improving international cooperation to effectively tackle financial crimes in the region. This systematic review provides a comprehensive analysis of the nature, scope, and impact of financial crimes in Western Balkan countries, as well as the measures taken to address them. The review finds that financial crimes are prevalent in the region, with varying degrees of severity across different countries. The weak regulatory environment in some Western Balkan countries is identified as a contributing factor to the prevalence of financial crimes. The impact of these crimes on the region's economies can be significant, leading to reduced foreign investment, decreased economic growth, and increased poverty. Measures to address financial crimes, including anti-money laundering laws, financial intelligence units, and strengthening of law enforcement agencies, have been implemented in Western Balkan countries, but their

effectiveness varies across different countries. While some measures have been successful in detecting and prosecuting financial crimes, others have not been effective in reducing the prevalence of these crimes. One potential reason for the variation in effectiveness is the level of political will and commitment to addressing financial crimes. Some Western Balkan countries have demonstrated a strong commitment to tackling financial crimes, while others have been slower to act. In addition, the capacity of law enforcement agencies and the level of international cooperation also play a significant role in the success of measures to address financial crimes. There is also a need for further research on the factors that contribute to the prevalence of financial crimes in Western Balkan countries. While some studies have identified the weak regulatory environment as a contributing factor, other factors, such as political instability and organized crime, may also play a role. Understanding the root causes of financial crimes can help policymakers develop more effective measures to address them. Overall, this systematic review highlights the significant challenges posed by financial crimes in Western Balkan countries and the need for effective measures to address them. The review underscores the importance of strengthening regulatory frameworks, enhancing the capacity of law enforcement agencies, and improving international cooperation to effectively tackle financial crimes in the region. By taking a comprehensive approach to addressing financial crimes, policymakers can help promote economic growth, reduce poverty, and improve the overall well-being of people in the Western Balkans.

4.1. Results of Systematic Review

The search yielded a total of 67 articles, of which 23 were deemed relevant and included in the review. The analysis of the literature revealed that financial crimes in Western Balkan countries are widespread and include money laundering, tax evasion, fraud, corruption, and bribery. These crimes have significant economic and social consequences, including reduced foreign investment, decreased economic growth, and increased poverty. The review also highlighted the measures taken by the countries to address financial crimes, including the implementation of anti-money laundering laws, establishment of financial intelligence units, and strengthening of law enforcement agencies. The systematic review of literature on financial crimes in Western Balkan countries revealed that these crimes are a significant challenge for the region. The review identified various types of financial crimes, including money laundering, fraud, corruption, tax evasion, and organized crime. The prevalence of these crimes varies across different countries, but they all have a negative impact on the economy, the rule of law, and social stability. Anti-money laundering laws and regulations have been implemented in Western Balkan countries, but their effectiveness varies across different countries. While some countries have been successful in detecting and prosecuting money laundering activities, others have not been effective in reducing the prevalence of these crimes. The capacity of law enforcement agencies and the level of international cooperation also play a significant role in the success of measures to address financial crimes. Financial intelligence units (FIUs) have been established in many Western Balkan countries to detect and investigate financial crimes. However, the effectiveness of these units varies across different countries. Some countries have established strong and independent FIUs, while others have weak and ineffective units. There is a need to strengthen the capacity and independence of FIUs in Western Balkan countries to effectively detect and investigate financial crimes. The review also revealed the significant role of organized crime in financial crimes in the Western Balkans. Organized crime groups have been involved in various types of financial crimes, including money laundering, corruption, and tax evasion. The review identified a lack of effective measures to tackle organized crime as a significant challenge in addressing financial crimes in the region. The systematic review also revealed the need for further research on the factors that contribute to the prevalence of financial crimes in Western Balkan countries. While some studies have identified the weak regulatory

environment as a contributing factor, other factors, such as political instability and organized crime, may also play a role. Understanding the root causes of financial crimes can help policymakers develop more effective measures to address them.

Overall, the results of this systematic review highlight the significant challenges posed by financial crimes in Western Balkan countries and the need for effective measures to address them. The review underscores the importance of strengthening regulatory frameworks, enhancing the capacity of law enforcement agencies and financial intelligence units, and improving international cooperation to effectively tackle financial crimes in the region. By taking a comprehensive approach to addressing financial crimes, policymakers can help promote economic growth, reduce poverty, and improve the overall well-being of people in the Western Balkans.

4.2. Answers to Research Questions

1) Types of Financial Crimes in Western Balkan Countries:
   Financial crimes in Western Balkan countries include money laundering, corruption, fraud, embezzlement, tax evasion, and terrorist financing. These crimes are often interconnected and carried out by individuals and groups with access to financial resources and power.

2) Causes and Consequences of Financial Crimes in Western Balkan Countries:
   The causes of financial crimes in Western Balkan countries include weak governance, insufficient regulation, political instability, organized crime, and poverty. The consequences of financial crimes in the region are significant and include economic losses, decreased foreign investment, erosion of public trust in institutions, and threats to security and stability.

3) Policies and Regulatory Frameworks for Combating Financial Crimes in Western Balkan Countries:
   Western Balkan countries have implemented various policies and regulatory frameworks to combat financial crimes, including anti-money laundering laws, asset forfeiture laws, and financial intelligence units. Additionally, the region has taken steps towards implementing the EU's Aquis Communautaire on money laundering and terrorism financing.

4) Challenges and Limitations in Combating Financial Crimes in Western Balkan Countries:
   Challenges and limitations in combating financial crimes in Western Balkan countries include a lack of political will and commitment to enforcement, weak judicial systems, insufficient resources and capacity of law enforcement agencies, and the existence of deep-rooted corruption networks.

5) Gaps in Current Research on Financial Crimes in Western Balkan Countries:
   Despite a growing body of research on financial crimes in Western Balkan countries, there are still significant gaps in the literature. More research is needed on the effectiveness of existing policies and regulatory frameworks, the links between financial crimes and political corruption, and the role of international actors in combating financial crimes in the region. Additionally, more studies are needed to better understand the economic, social, and political factors that contribute to financial crimes in Western Balkan countries.

5. CONCLUSIONS

In conclusion, this systematic review highlights the prevalence of financial crimes in Western Balkan countries and the urgent need for effective measures to address them. The study identified the need for further research to understand the nature and extent of these crimes and to evaluate the effectiveness of the measures taken to address them. It is hoped that the findings of this review will inform policymakers and law enforcement agencies in the region and contribute to the development of more effective strategies for combating financial crimes in

Western Balkan countries. Financial crimes are a significant problem in Western Balkan countries, with wide-ranging economic and social consequences. While measures have been taken to address these crimes, these measures have not always been effective. Further research is needed to understand the nature and extent of financial crimes in the region, as well as the effectiveness of the measures taken to address them. Such research could inform policymakers and law enforcement agencies. The present systematic review aimed to provide a comprehensive analysis of financial crimes in Western Balkan countries. The review revealed that these crimes are prevalent in the region and pose significant challenges to the economy, the rule of law, and social stability. The review identified various types of financial crimes, including money laundering, fraud, corruption, tax evasion, and organized crime. The prevalence of these crimes varies across different countries, and their effectiveness in tackling these crimes varies accordingly. The review identified the need to strengthen regulatory frameworks, enhance the capacity of law enforcement agencies and financial intelligence units, and improve international cooperation to effectively tackle financial crimes in the Western Balkans. To address these challenges, policymakers should take a comprehensive approach to addressing financial crimes that considers the root causes of these crimes. The present review also revealed the need for further research on the factors that contribute to the prevalence of financial crimes in Western Balkan countries. Future studies could investigate the role of political instability, weak regulatory environments, and organized crime in contributing to the prevalence of financial crimes in the region. The present study's findings have significant implications for policymakers and other stakeholders involved in addressing financial crimes in the Western Balkans. Policymakers should focus on implementing effective measures to tackle financial crimes and improve the capacity of law enforcement agencies and financial intelligence units to detect and investigate these crimes. Additionally, policymakers should promote international cooperation and information sharing to effectively tackle cross-border financial crimes in the region.

6. DISCUSSION

The present review has several limitations that should be considered when interpreting the results. Firstly, the review was limited to English-language publications, and therefore, relevant studies in other languages may have been excluded. Secondly, the review only focused on financial crimes in Western Balkan countries and did not consider financial crimes in other regions. Therefore, the findings may not be generalizable to other regions. Despite these limitations, the present review provides valuable insights into the prevalence of financial crimes in Western Balkan countries and the challenges faced in addressing them. The review highlights the need for policymakers to take a comprehensive approach to addressing financial crimes and improve the regulatory frameworks, law enforcement capacity, and international cooperation to effectively tackle these crimes. The results of this review confirm that financial crimes are a significant issue in Western Balkan countries and require urgent attention from policymakers and law enforcement agencies. The study also identified the need for more research to understand the nature and extent of financial crimes in the region, as well as the effectiveness of the measures taken to address them. Future research should also explore the relationship between financial crimes and other forms of organized crime, such as drug trafficking and human trafficking, as well as the role of international organizations in addressing financial crimes in the region. Future research could investigate the effectiveness of specific measures to tackle financial crimes, such as the implementation of anti-money laundering regulations and the establishment of financial intelligence units. Additionally, future studies could investigate the impact of financial crimes on the economy, social stability, and the rule of law in Western Balkan countries.

In conclusion, the present review provides a comprehensive analysis of financial crimes in Western Balkan countries and highlights the significant challenges posed by these crimes. Policymakers should take a comprehensive approach to tackling financial crimes and prioritize implementing effective measures to address these crimes. By doing so, policymakers can promote economic growth, reduce poverty, and improve the overall well-being of people in the Western Balkans.

7. RECOMMENDATIONS

Based on the findings of this systematic review, several recommendations can be made for addressing financial crimes in Western Balkan countries. Firstly, there is a need for increased political will and commitment to combat financial crimes. This includes strengthening the institutional capacity of law enforcement agencies and the judiciary, as well as providing adequate resources to these agencies. In addition, governments in the region should work towards building public trust in institutions by increasing transparency and accountability, particularly in the areas of public procurement and public finance management. Secondly, efforts should be made to address the root causes of financial crimes in the region, such as weak governance, poverty, and political instability. This can be achieved by implementing policies that promote economic growth and job creation, strengthening anti-corruption measures, and investing in education and healthcare. Thirdly, there is a need for increased regional cooperation in combating financial crimes. This includes sharing of information and intelligence among law enforcement agencies, harmonizing legislation and regulatory frameworks, and strengthening cooperation with international partners, particularly the European Union. Fourthly, there is a need for more research on the effectiveness of existing policies and regulatory frameworks in combating financial crimes in Western Balkan countries. This includes assessing the effectiveness of anti-money laundering laws, asset forfeiture laws, and financial intelligence units in deterring financial crimes. Additionally, more research is needed to better understand the links between financial crimes and political corruption, and the role of international actors in combating financial crimes in the region. Finally, more attention should be given to the role of civil society organizations and the media in promoting accountability and transparency in the region. Civil society organizations can play a key role in monitoring government institutions and advocating for stronger anti-corruption measures. The media can also play a critical role in exposing financial crimes and holding those responsible accountable. In conclusion, addressing financial crimes in Western Balkan countries requires a multi-faceted approach that includes strengthening institutional capacity, addressing the root causes of financial crimes, increasing regional cooperation, conducting more research, and engaging civil society organizations and the media. By taking these steps, governments in the region can work towards creating a more stable, transparent, and prosperous future for their citizens.

LITERATURE:
1. Albanese, J. S. (2015). Transnational organized crime in the Balkans. In Handbook of transnational crime and justice (pp. 401-417). Sage Publications.
2. Baker, R., & Tucker, J. (2016). Financial Crime and Crises in the Era of False Profits. Journal of Financial Crime, 23(3), 535-540. doi: 10.1108/jfc-02-2016-0010
3. Bayar, Y., & Gavriletea, M. D. (2018). Foreign direct investment inflows and financial development in Central and Eastern European Union countries: A panel cointegration and causality. International Journal of Financial Studies, 6(2), 55.
4. Bukilić, S., & Petrović, P. (2017). The Effectiveness of Anti-Money Laundering Measures in Southeastern Europe. Western Balkans Security Observer, 1(1), 61-75.
5. Council of Europe. (2007). The role and functioning of Financial Intelligence Units. Council of Europe.

6. Council of Europe. (2017). GRECO Fourth Evaluation Round - Evaluation Report on Serbia on Corruption Prevention in Respect of Members of Parliament, Judges and Prosecutors. Retrieved from https://rm.coe.int/fourth-evaluation-round-evaluation-report-on-serbia-on-corruption-prev/168076a4d6

7. European Commission. (2018). Report from the Commission to the European Parliament and the Council: EU Strategy for the Western Balkans. Brussels.

8. European Commission. (2020). Enlargement Package 2020 - Commission Staff Working Document - Serbia 2020 Report. Retrieved from https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20201006-serbia-report.pdf

9. Financial Action Task Force. (2019). Anti-money laundering and counter-terrorist financing measures - Western Balkans.

10. FIS. (2019). Global financial crime compliance survey. FIS.

11. Grødeland, Å. B. (2013). Public perceptions of corruption and anti-corruption reform in the Western Balkans. Slavonic & East European Review, 91(3), 535-598.

12. International Monetary Fund. (2019). Republic of North Macedonia: Financial Sector Assessment Program - Anti-Money Laundering and Combating the Financing of Terrorism. Retrieved from https://www.imf.org/en/Publications/CR/Issues/2019/05/20/Republic-of-North-Macedonia-Financial-Sector-Assessment-Program-Anti-Money-Laundering-and-46883

13. Kokalj, M. (2018). Strengthening the enforcement of anti-money laundering in the Western Balkans. European Journal of Crime, Criminal Law and Criminal Justice, 26(4), 375-395.

14. Kostić-Bobanović, M. (2020). Perceived emotional intelligence and self-efficacy among novice and experienced foreign language teachers. Economic research-Ekonomska istraživanja, 33(1), 1200-1213.

15. Lavić, V., & Hadžiahmetović, A. (2021). Corporate income tax burden for SMEs: The case of Bosnia and Herzegovina. In BH Ekonomski forum (Vol. 13, No. 2, pp. 151-165).

16. Marx, L. (2021). Anti-Money Laundering Directives and the Right to Privacy and Data Protection, Is the Tension between the Anti-Money Laundering Directives and the Right to Privacy and Data Protection sensibly resolved? (Master's thesis).

17. Milošević, B. (2016). Money laundering as a form of economic crime in the role of financing terrorism. FACTA UNIVERSITATIS-Law and Politics, 14(4), 549-560.

18. Organisation for Economic Co-operation and Development. (2020). Southeast Europe Regional Programme. Retrieved from https://www.oecd.org/southeast-europe/programme/

19. Organization for Security and Co-operation in Europe. (2019). Financial investigations and asset recovery in the Western Balkans. Organization for Security and Co-operation in Europe.

20. Petrović, P., & Bukilić, S. (2018). Tackling Money Laundering in the Western Balkans. Western Balkans Security Observer, 2(2), 51-65.

21. Sadiku, L. (2010). Civil society and anti-corruption. Experiences from Albania, Kosovo and Serbia. Romanian Journal of Political Sciences, 10(02), 34-62.

22. The World Bank. (2018). Western Balkans Regular Economic Report. The World Bank.

23. Transparency International. (2021). Corruption Perceptions Index 2020. Retrieved from https://www.transparency.org/en/cpi/2020/index/nzl

24. United Nations Development Programme. (2019). Country Profiles for SDG Financing: The Western Balkans. United Nations Development Programme.

25. Vuković, D., & Pavlović, V. (2017). The financial system and the fight against money laundering in the Republic of Serbia. Panoeconomicus, 64(2), 179-197.

MAPPING THE LITERATURE ON INTERNATIONAL STUDENT MIGRATION

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ABSTRACT

This research reviews the literature on international student migration. It analyses 717 papers registered in the Web of Science database. Key research themes, authors and influential papers are of prime interest. The literature on international student mobility boomed in recent years. The number of scientific papers with the keywords 'international student migration/mobility' increased from 70 in the period 1988–2010 to 647 in the period 2011–April 2023. The increase is related to both the growth in overall numbers of international students and structural changes in the global network, such as the emergence of major new sending and destination countries, and government policies aimed at attracting global talent. The patterns of the co-authorship network generally tend to mirror structures of the major senders and destinations in global student migration, with the notable dominance of UK- and USA-based authors. British researchers were authors of the most influential/trend-setting papers in terms of citations. Network science was used to identify the overall structure and the major components of the co-authorship network. Some 60 countries produced at least one international co-authorship, but strikingly, some large sending countries produced quite a few international co-authorships (China, India, Russia and Kazakhstan). This is quite surprising, as international student migration is, by definition, an international subject.
Keywords: international student migration, literature review, bibliometric analysis, network science

1. INTRODUCTION

Demand for international education has boomed in the last three decades. The number of estimated global higher education enrolments increased from 67 million in 1990 to 181 million in 2010, and then to 236 million by 2020 (UNESCO 2023). The flows of international students are highly concentrated. Four countries (the USA, UK, Australia and Canada) received almost 40% of all internationally mobile students (6.3 million), with China and India as the main countries of origin in 2020. Member countries of the Organisation for Economic Co-operation and Development (OECD) used to attract more than 90% of international students in the 1990s and 2000s (Verbik and Lasanowski 2007; Barnett et al. 2016). The total number of international students reached 4.4 million by 2020 in the OECD countries (UNESCO 2023). Key destinations included the USA and UK (for their renowned universities and diverse range of academic programs), Germany (for its excellent higher education system and affordable tuition fees),

France (for its rich cultural heritage), Canada (for its high-quality education system, visa/immigration policies, and postgraduate work opportunities, (Chen 2007) and Australia (for its research programs, favourable climate, lifestyles and job opportunities, Yang 2007). The structure of student destinations has evolved in the last decade. While the USA has remained a top destination for international students, its attractiveness was impacted by politics, stricter visa policies and rising tuition costs (Laws and Ammigan 2020). Some smaller European countries (e.g. the Netherlands and Austria), on the other hand, experienced significant growth in international student enrolments. The growth was fuelled by the Bologna process, (Teichler 2012), good career prospects for postgraduates, and the influx of students from the former Soviet bloc (Chankseliani and Hessel 2016; Baláž et al. 2018). Several Asian countries have also emerged as popular destinations. International students in China, for example, seek expertise in Chinese languages and Chinese society and culture (Lee 2019), as well as career prospects in the vast Chinese economy (Gbollie and Gong 2020). Chinese universities in Shanghai and Beijing, for example, fostered some high-quality research programmes in the fields of science, technology, engineering and mathematics, and offered good career prospects (Jiani 2016; Ahmad and Shah 2018; Gbollie and Gong 2020). Japanese universities in Tokyo, Kyoto and Osaka have attracted international students with a combination of unique culture, quality research and technology programmes taught in English (Brown 2014). Other important new destinations include countries in the Gulf region, such as the United Arab Emirates and Qatar. These countries aim to attract and retain international students after graduation. They have invested in establishing high-quality universities and offer generous scholarships to draw students from around the world. Countries like Malaysia, Thailand, and South Africa (Lee and Sehoole 2020) have also experienced high growth in international student enrolment. Notable changes in the volume of flows and structure of destinations have been brought about by global competition for talent (Douglass and Edelstein 2009), growth in global career opportunities (Donald et al. 2018), and/or students' pursuit of cultural exposure (Gu et al. 2010). Many countries are increasingly recognising international students as valuable human capital. Governments and educational institutions compete to attract the best and brightest students by offering scholarships, favourable immigration policies, and improved post-study work opportunities. Flows between countries of origin and destination are informed by some important pull–push and structural factors, such as demand for high-quality education and university rankings (Hazelkorn 2015), distance and common language (Abbot and Silles 2016; Pawar et al. 2020; Ovchinnikova et al. 2022), tuition fees (Wilkins et al. 2013), cost of living (Rodríguez González et al. 2011; Liu et al. 2018), availability of credit mobility in inter-university exchange schemes (King et al. 2010) and general awareness of the host country and its reputation (Mazzarol and Soutar 2002). Network analyses (Barnett et al. 2016; Baláž et al. 2018) indicated that international flows of students are determined by 'connectivity factors', such as language and/or proximity and established flows of labour, trade, and knowledge. Student destinations have been sensitive to developments in immigration and settlement opportunities and prospects for jobs and permanent residency. Many international students consider the opportunity to gain work experience and potentially build a life in the host country (Nilsson and Ripmeester 2016). Some countries with a history of friendly immigration policies for the highly skilled (Demirci 2019) tightened their visa rules (USA) and became less attractive for international students (McKivigan 2020). Rising tuition fees and the cost of living in some traditional study destinations (Cantwell 2019) have led students to consider more affordable alternatives. Some host countries (e.g. China; Wen and Hu 2019; Turkey; Aras and Mohammed 2019; and the United Arab Emirates; Ahmad and Hussain, 2017) responded with financial aid options, scholarships and support mechanisms to help students overcome these financial barriers.

Issues of political and social stability became important factors in destination choices by international students. Many students from unstable and/or insecure countries choose destinations with more stable and predictable political and social environments (Lee and Sehoole 2020). International students are increasingly interested in countries that are perceived as inclusive, socially tolerant, and welcoming (Ahmad and Hussain 2017). Growing numbers of international students were also assisted by the rise of transnational education programmes and technological advancements (such as online learning programmes). The booming demand for international education has been accompanied by substantial growth in the literature on internationally mobile students. This study reviews the literature on international student migration for the period 1988–April 2023. It explores the key themes and paradigms and their evolution over time. The paper is organised as follows: Chapter Two introduces the research methods and data sources. Chapter Three presents the results of the structural analysis, identifying the key authors, countries and research topics in the field of international student migration, Chapter Four introduces findings on national and international co-authorship in the field. The concluding part of the paper summarises the key findings, notes some important limitations, and suggests directions for further research. The paper has some novel elements; for example, it applies network science to establish international co-authorship networks in the literature on international student migration.

2. DATA SOURCES AND METHODS

A two-stage literature review was performed. The initial body of literature was identified primarily based on searches of the Web of Science (WoS) Social Science Citation Index using the query 'student mobility' OR 'student migration'. The initial search produced 904 items, after the removal of duplicates and items unrelated to international student migration. A search query may generate both relevant and irrelevant items and some keywords appear in multiple contexts. We performed an individual inspection of each abstract to establish a final body of literature on international student migration. Some 717 studies were considered for further screening. The number of scientific papers with the keywords 'international student migration/mobility' increased from 70 in the period 1988–2010 to 647 in the period 2011–April 2023.
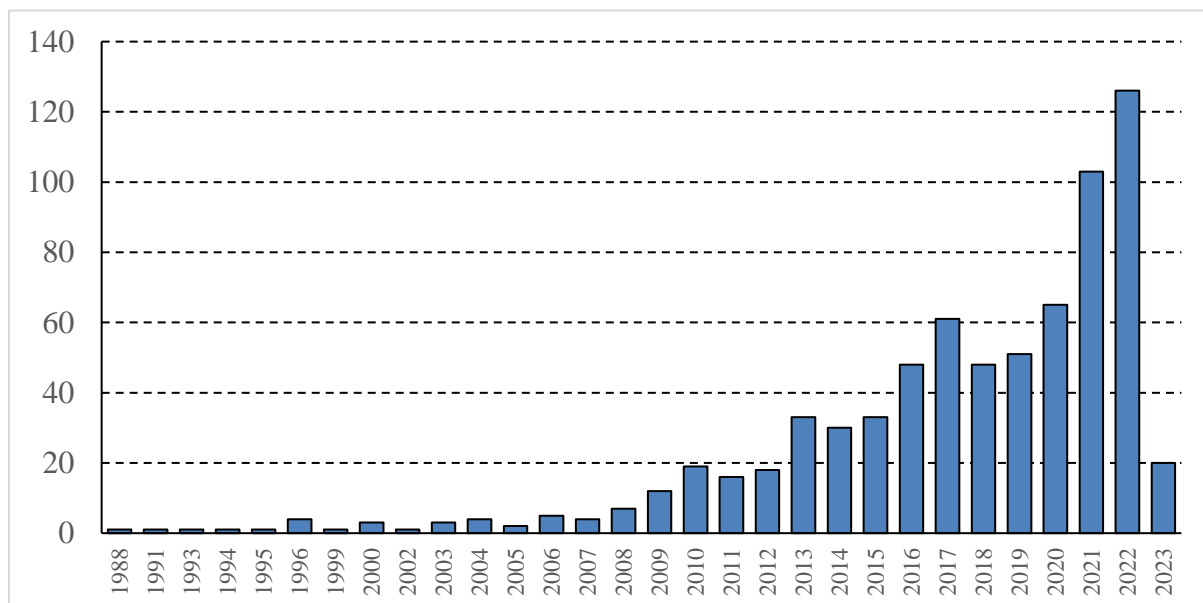
Figure 1: Number of scientific papers on international student migration 1988–April 2023 (Source: Web of Science and the authors' computations)

3. JOURNALS, AUTHORS, COUNTRIES AND TOPICS

The majority of studies (69%) were written/co-authored by authors from major OECD countries (the UK, USA, Australia, Germany and Spain) in the period 1988–2010 (Table 1). The most influential papers were written by Allan M. Findlay, Russell King and Parvati Raghuram in the periods 1988–2010 and 2011–April 2023 (Table 2). In this respect, the research on international student migration followed the distribution of major destinations chosen by international students. Authors from the same countries generated over half of the total papers (58%) under this review, but authors from the major sending countries (China, Italy, Vietnam and Kazakhstan became more visible in the period 2011–April 2023 (Table 2). Changes in authorship structure corresponded with the rising importance of the new sending and destination countries in Asia and Europe. The changing environment of international student migration was reflected in the increased diversity of the WOS categories and WOS micro citation topics over time (Table 2):

- The term 'education', followed by 'economics' and 'geography' dominated the list of the major WOS categories in 1988–2010. The corresponding WOS micro topics included 'international students', 'immigration', and 'intergenerational mobility'. The literature on international student migration mostly focused on the explorative analysis of transnational and cross-border mobility of tertiary students (Findlay et al. 2006; Holdsworth 2009; Sigalas 2010) and an evaluation of the costs and benefits of international student migration (Hanushek et al. 2004).

- The WOS categories related to 'education' and 'economics', of course, remained prominent in studies on international student migration, but some other topics gained importance in the period 2011–April 2023. The rising occurrence of WOS categories 'geography', 'sociology', 'demography' and 'social science' indicates that research on international student migration went beyond the initial focus on (higher) education, and there was visible progress towards theorising international student migration (Findlay 2011; Raghuram 2013; King and Raghuram 2013) and analysing major factors of global flows by mobile students (Rodríguez González et al. 2011; Beine et al. 2014; Tran 2016).

Table following on the next page

Top 10 WOS Category	n	(%)	Top 10 WOS Citation Micro-topics	n	(%)	TOP 10 countries	n	(%)
1988–2010								
Education, Educational Research	30	42.9	6.11.1255 Intl. Students	18	25.7	USA	13	18.6
Economics	8	11.4	6.86.442 Immigration	9	12.9	UK	11	15.7
Education, Scient. Disc.	5	7.1	6.11.666 Intergenerational Mobility	8	11.4	Germany	10	14.3
Demography	4	5.7	1.156.2047 Global Surgery	3	4.3	Australia	8	11.4
Geography	4	5.7	6.10.833 Tax Evasion	3	4.3	Denmark	3	4.3
Environmental Sciences	3	4.3	1.14.363 Nursing Education	2	2.9	Spain	3	4.3
Health Care Sciences Services	3	4.3	6.11.1506 Engineering Education	2	2.9	Finland	2	2.9
Sociology	3	4.3	6.11.345 School Leadership	2	2.9	France	2	2.9
Business Finance	2	2.9	6.24.15 Parenting	2	2.9	Greece	2	2.9
Engineering Environmental	2	2.9	1.14.703 Electronic Health Records	1	1.4	Sweden	2	2.9
2011–April 2023								
Education, Educ. Res.	280	42.9	6.11.1255 Intl. Students	383	58.7	UK	145	22.2
Geography	107	16.4	6.86.442 Immigration	63	9.7	USA	89	13.7
Demography	81	12.4	6.11.666 Intergenerational Mobility	33	5.1	China	75	11.5
Sociology	49	7.5	6.69.342 Language Policy	11	1.7	Germany	60	9.2
Economics	38	5.8	6.86.280 Agglomeration Economies	11	1.7	Australia	46	7.1
Social Sciences Interdisciplinary	29	4.4	6.11.31 Self-regulated Learning	10	1.5	Spain	37	5.7
Environmental Studies	23	3.5	6.11.345 School Leadership	8	1.2	Italy	31	4.8
Ethnic Studies	20	3.1	6.86.149 Gentrification	8	1.2	Netherlands	26	4.0
Linguistics	18	2.8	6.24.1266 Social Work Practice	5	0.8	Canada	25	3.8
Area Studies	14	2.1	1.14.265 Nursing	4	0.6	Portugal	25	3.8

Table 1: Top WOS categories, citation micro-topics and countries
(Notes: One paper may have co-authors from multiple countries, so the total number of countries is higher than the number of papers. Publications and citations as of April 2023.)
(Source: The Web of Science. Journals do not include book series)

Table following on the next page

Up to 2010		2011–April 2023	
Paper	**Cites**	**Authors**	**Cites**
Teichler, U. (2004). The changing debate on internationalisation of higher education. *Higher Education*, *48*, 5–26.	317	Findlay, A. M., King, R., Smith, F. M., Geddes, A., & Skeldon, R. (2012). World class? An investigation of globalisation, difference and international student mobility. *Transactions of the Institute of British Geographers*, *37*(1), 118–131.	330
Li, M., & Bray, M. (2007). Cross-border flows of students for higher education: Push–pull factors and motivations of mainland Chinese students in Hong Kong and Macau. *Higher Education*, *53*, 791–818.	303	King, R., & Raghuram, P. (2013). International student migration: Mapping the field and new research agendas. *Population, Space and Place*, *19*(2), 127–137.	213
Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Disruption versus Tiebout improvement: The costs and benefits of switching schools. *Journal of Public Economics*, 88(9–10), 1721-1746.	212	Raghuram, P. (2013). Theorising the spaces of student migration. *Population, Space and Place*, *19*(2), 138–154.	189
Xiang, B., & Shen, W. (2009). International student migration and social stratification in China. *International Journal of Educational Development*, *29*(5), 513–522.	168	Rodríguez González, C., Bustillo Mesanza, R., & Mariel, P. (2011). The determinants of international student mobility flows: An empirical study on the Erasmus programme. *Higher Education*, *62*, 413–430.	170
Hemsley-Brown, J., & Goonawardana, S. (2007). Brand harmonization in the international higher education market. *Journal of Business Research*, *60*(9), 942–948.	152	Findlay, A. M. (2011). An assessment of supply and demand-side theorizations of international student mobility. *International Migration*, *49*(2), 162–190.	161
Holdsworth, C. (2009). 'Going away to uni': mobility, modernity, and independence of English higher education students. *Environment and Planning A*, 41(8), 1849–1864.	149	Beine, M., Noël, R., & Ragot, L. (2014). Determinants of the international mobility of students. *Economics of Education Review*, *41*, 40–54.	149
Findlay, A., King, R., Stam, A., & Ruiz-Gelices, E. (2006). Ever reluctant Europeans: The changing geographies of UK students studying and working abroad. *European Urban and Regional Studies*, *13*(4), 291–318.	132	Mok, K. H., Xiong, W., Ke, G., & Cheung, J. O. W. (2021). Impact of COVID-19 pandemic on international higher education and student mobility: Student perspectives from mainland China and Hong Kong. *International Journal of Educational Research*, *105*, 101718.	112
Sigalas, E. (2010). Cross-border mobility and European identity: The effectiveness of intergroup contact during the ERASMUS year abroad. *European Union Politics*, *11*(2), 241–265.	109	Perna, L. W., Orosz, K., Gopaul, B., Jumakulov, Z., Ashirbekov, A., & Kishkentayeva, M. (2014). Promoting human capital development: A typology of international scholarship programs in higher education. *Educational Researcher*, *43*(2), 63–73.	111
Biao, X. (2003). Emigration from China: A sending country perspective. *International Migration*, 41(3), 21–48.	106	Tran, L. T. (2016). Mobility as 'becoming': A Bourdieuian analysis of the factors shaping international student mobility. *British Journal of Sociology of Education*, *37*(8), 1268–1289.	107
Doyle, S., Gendall, P., Meyer, L. H., Hoek, J., Tait, C., McKenzie, L., & Loorparg, A. (2010). An investigation of factors associated with student participation in study abroad. *Journal of Studies in International Education*, *14*(5), 471–490.	91	Souto-Otero, M., Huisman, J., Beerkens, M., De Wit, H., & Vujić, S. (2013). Barriers to international student mobility: Evidence from the Erasmus program. *Educational Researcher*, *42*(2), 70–77.	106

Table 2: Top papers by number of WOS citations
(Source: The Web of Science. Journals do not include book series. Notes: authors and countries are listed by the author's first affiliation. Publications and citations as of April 2023.)

Table 3 analyses the occurrence of the most frequent author keywords in the reviewed literature. The term 'mobility' tends to denote short-term moves, while 'migration' indicates longer-term ones (over six months) in mobility/migration research. The analysis suggests that papers citing student 'mobility' were more frequent and increased by higher rates than those quoting student 'migration' for the period 2011–April 2023 compared to the period 1988–2010. The development probably refers to the rapid expansion of the Erasmus scheme and similar student exchange programmes after 2010 (Rodríguez González et al. 2011; Souto-Otero et al. 2013). Analysis of the authors' keywords also indicates a notable increase in keywords on 'globalisation' and 'transnationalism' over the two periods. The trend reflects the growing importance of globalisation and the global competition for talent (Findlay et al. 2012; Hazelkorn 2015).

keywords	1988–2010	2011–April 2023	total
migration	8	62	70
mobility	26	286	312
mobility + migration	1	104	105
globalisation	3	36	39
transnationalism	3	22	25
globalisation + transnationalism	0	2	2
degree	1	15	16
Erasmus	3	44	47

Table 3: Author keywords
(Source: The Web of Science)

4. INTERNATIONAL CO-AUTHORSHIP

Insights provided by authors from diverse countries help us to understand complex problems in contemporary migration research. International student migration is, by definition, an international subject, and one would, therefore, expect high rates of international co-authorship. The network of co-publications (Figure 2) consists of nodes (circles) representing countries (denoted by their country codes by internet domains) and edges (curved lines) representing the number of co-authorships. The thickest edges on the diagram, for example, represent six international co-authorships from the UK and China, and the UK and Spain. The higher the number of total international co-authorships, the larger the circle. The network comprises several clusters (modules), with members of a specific module accounting for denser mutual connections than connections with members of other modules. The major modules centre on global destinations and/or sending countries of international students, such as the UK, USA, Germany, Australia, China and Spain. Specific modules are depicted in different colours, with the largest (light-green) module combining the UK (the leading European destination), and some major European senders, such as Italy, Spain. Poland, Ireland and Turkey). The second-largest (violet) US and Asia-Pacific module centres on China and comprises some important destinations for Chinese students (the USA, Australia, Canada, Singapore). It also includes some major emerging senders, such as Vietnam, India and Kazakhstan. The third-largest (light blue) module comprises some important middle-sized European senders, such as Portugal and Greece and destinations (Belgium, Netherlands). The fourth (red) module centres on major European destinations, such as Germany, France, and Switzerland. Finally, the fifth (dark green) module mostly comprises East-Asia countries and New Zealand. Some 312 papers (out of a total of 717) were written by a single author, while the rest (415) by two or more authors. Some 60 countries (out of a total of 68 countries or regions) produced at least one international co-authorship (Figure 2). The literature was dominated by major Anglo-Saxon countries. The UK, USA, Canada, Ireland and Australia, for example, provided for 41.9% of all international co-authorships. The UK, for example, provided 65 co-authorships with 33 countries and the

USA 47 co-authorships with 22 countries, but strikingly, some large countries produced few or no international co-authorships. China, for example, produced only 25 international co-authorships with 11 countries. There were quite a few international co-authorships for some major senders of international students, such as India (two co-authorships with two countries), Vietnam (eight co-authorships with eight countries) and Russia (four co-authorships with three countries). This is quite surprising, given the vast growth in international student flows in the past three decades. Table 4 presents network statistics for the international co-authorship network. Relatively low rates of international co-authorship are reflected in the low density of the network. The network density (0.127 out of the maximum possible 1) and modularity statistics (0.283) indicated a rather sparsely connected network divided into loosely coupled clusters. Some modules (red and dark-green) are established from one or two co-authorships. A casual co-authorship by researchers from distant countries (Chile and Morocco, for example) may place these countries in the same module. Apart from incidental collaborations, the structure of the co-authorship network generally tends to mirror the structures of the major senders and the destinations in global student migration.
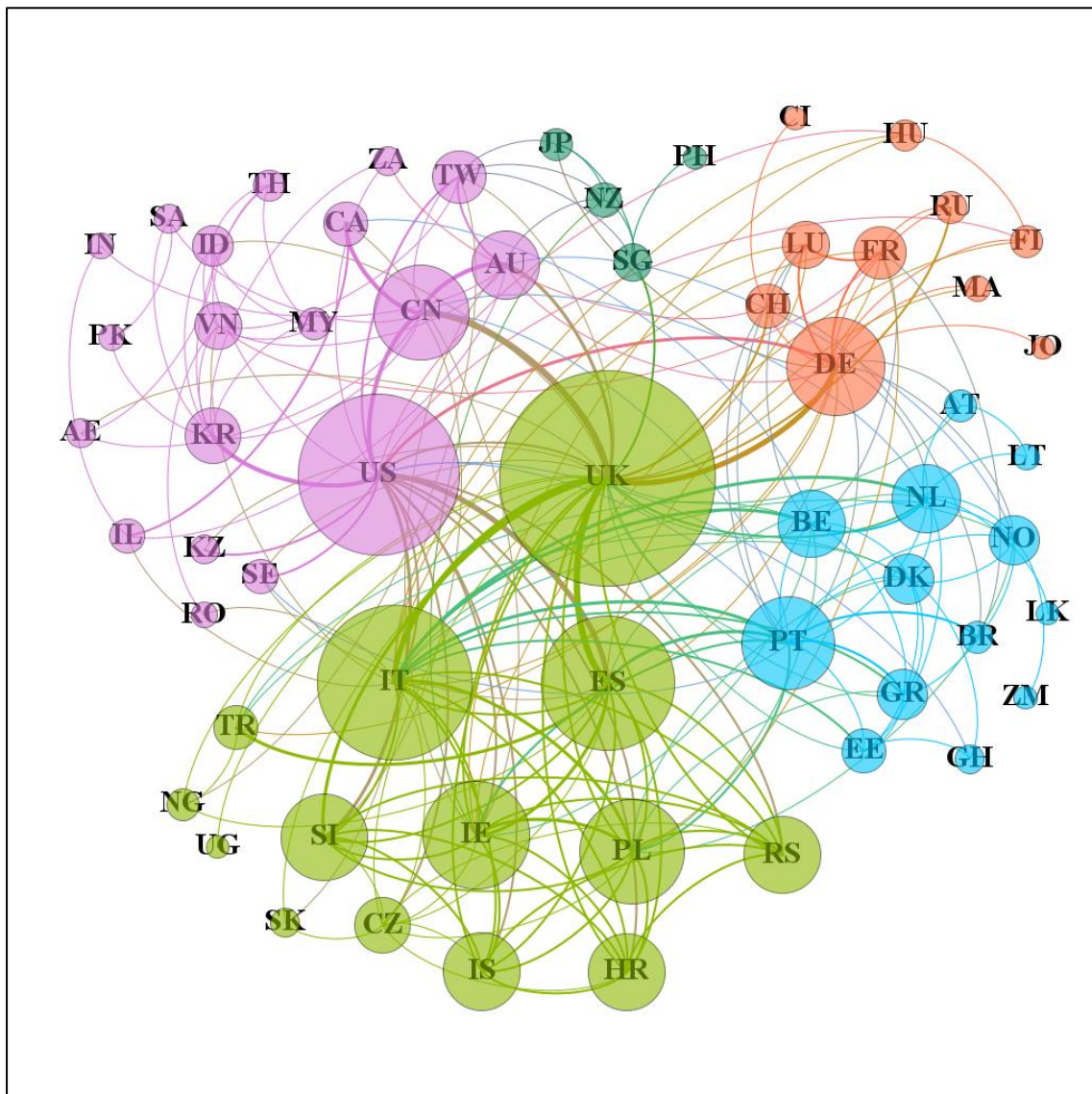
Figure 2: Co-authorship network in the literature on international student migration 1988–April 2023
(source: Web of Science and the authors' computations)

Statistics	Value
nodes	60
edges	226
density	0.127
average degree	7.467
average weighted degree	11.367
modularity coefficient	0.283
number of modules	5
average clustering coefficient	0.599

Table 4: Network overview (authors' computations)
(Source: authors' computations)

5. CONCLUSIONS

This research analysed the literature on international student migration. It identified a major body of literature, patterns of international co-authorship and key authors and some trend-setting publications. A substantial increase in the total number of scientific publications in the period 2010–April 2023 was the most prominent trend in the literature on international student migration. The increase is related to (i) growth in overall numbers of international students, (ii) structural changes in the global network of international students (emergence of new major sending and destination countries, e.g. China and India) and (iii) government policies aimed at attracting global talent. All these factors contributed to the growing diversity of countries and research themes covered by the literature on internationally mobile students. Network science was used to identify the overall structure and the major components of the co-authorship network. Individual modules mostly mirrored geographical patterns of international student exchange, both on a global scale (e.g. for major destinations, such as the UK and USA) and at regional levels (e.g. East-Asia and South-East Asia). The topology of the network accounted for the low density and rather low modularity. The modules were weakly interconnected. The research pointed to the dominance of national co-authorship and a surprisingly low intensity of international collaboration in the field of international student migration. The research has some limitations. It analysed literature covered by the Web of Science database, but it did not consider literature published in journals included in other databases. All research items included in this research were published in English and the limitations suggest directions for further research. Future research may explore papers covered by other literature databases, such as SCOPUS and/or ERIC, as well as papers published in national languages. Major international senders and receivers (China, India and Arab-speaking countries) are obvious candidates for analysis of literature published in national languages.

LITERATURE:
1. Ahmad, S. Z., & Hussain, M. (2017). An investigation of the factors determining student destination choice for higher education in the United Arab Emirates. *Studies in Higher Education*, 42(7), 1324-1343.
2. Ahmad, A. B., & Shah, M. (2018). International students' choice to study in China: an exploratory study. *Tertiary Education and Management*, 24, 325-337.
3. Abbott, A., & Silles, M. (2016). Determinants of international student migration. *The World Economy*, 39(5), 621-635.
4. Aras, B., & Mohammed, Z. (2019). The Turkish government scholarship program as a soft power tool. *Turkish Studies*, 20(3), 421-441.
5. Baláž, V., Williams, A. M., & Chrančoková, M. (2018). Connectivity as the facilitator of intra-European student migration. *Population, Space and Place*, 24(3), e2101.

6. Barnett, G. A., Lee, M., Jiang, K., & Park, H. W. (2016). The flow of international students from a macro perspective: A network analysis. Compare: *A Journal of Comparative and International Education*, 46(4), 533-559.

7. Brown, H. G. (2014). Contextual Factors Driving the Growth of Undergraduate English-Medium Instruction Programmes at Universities in Japan. *The Asian Journal of Applied Linguistics*, 1(1), 50–63.

8. Cantwell, B. (2019). Are international students cash cows? Examining the relationship between new international undergraduate enrolments and institutional revenue at public colleges and universities in the US. *Journal of International Students*, 5(4), 512-525.

9. Chankseliani, M., & Hessel, G. (2016). *International student mobility from Russia, Eastern Europe, Caucasus, and Central Asia to the UK: trends, institutional rationales and strategies for student recruitment*. The Centre for Comparative and International Education, University of Oxford, Oxford, UK

10. Chen, L. H. (2007). Choosing Canadian graduate schools from afar: East-Asian students' perspectives. *Higher Education*, 54(5), 759.

11. Donald, W. E., Ashleigh, M. J., & Baruch, Y. (2018). Students' perceptions of education and employability: Facilitating career transition from higher education into the labor market. *Career Development International*, 23(5), 513-540.

12. Demirci, M. (2019). Transition of international science, technology, engineering, and mathematics students to the US labor market: The role of visa policy. *Economic Inquiry*, 57(3), 1367-1391.

13. Douglass, J. A., & Edelstein, R. (2009). *The Global Competition for Talent: The Rapidly Changing Market for International Students and the Need for a Strategic Approach in the US*. Research & Occasional Paper Series. CSHE. 8.09. Center for Studies in Higher Education.

14. Gbollie, C., & Gong, S. (2020). Emerging destination mobility: Exploring African and Asian international students' push-pull factors and motivations to study in China. International *Journal of Educational Management*, 34(1), 18-34.

15. Gu, Q., Schweisfurth, M., & Day, C. (2010). Learning and growing in a 'foreign'context: Intercultural experiences of international students. *Compare*, 40(1), 7-23.

16. Hazelkorn, E. (2015). *Rankings and the Reshaping of Higher education: The Battle for World-Class Excellence*. Springer.

17. Jiani, M. A. (2017). Why and how international students choose Mainland China as a higher education study abroad destination. *Higher Education*, 74, 563-579.

18. King, R., Findlay, A., & Ahrens, J. (2010). International student mobility literature review. HEFCE. http://www.hefce.ac.uk/media/hefce/content/pubs/2010/rd2010/rd20_10.pdf

19. King, R., & Raghuram, P. (2013). International student migration: Mapping the field and new research agendas. *Population, Space and Place*, *19*(2), 127–137.

20. Laws, K., & Ammigan, R. (2020). International students in the Trump era: A narrative view. *Journal of International Students*, 10(3), xviii-xxii.

21. Lee, C. S. (2019). Global linguistic capital, global cultural capital: International student migrants in China's two-track international education market. *International Journal of Educational Development*, 67, 94-102.

22. Lee, J.J., Sehoole, C. (2020). International Students Seeking Political Stability and Safety in South Africa. *Higher Education Policy* 33, 305–322

23. Liu, Y., Kamnuansilpa, P., & Hirofumi, A. (2018). Factors affecting international students' decisions on destination for studying abroad: A case study in China. *Frontiers of Education in China*, 13, 93-118.

24. Mazzarol, T., & Soutar, G. N. (2002). "Push-pull" factors influencing international student destination choice. *International Journal of Educational Management*, 16(2): 82-90.

25. McKivigan, J. M. (2020). Effect of federal policy changes on international students pursuing higher education studies in the United States. *Higher Education Research*, 5(2), 60-67.
26. Nilsson, P. A., & Ripmeester, N. (2016). International student expectations: Career opportunities and employability. *Journal of International Students*, 6(2), 614-631.
27. Ovchinnikova, E., Mol, C. V., & Jones, E. (2022). The role of language proximity in shaping international student mobility flows. Globalisation, Societies and Education, 1-12.
28. Pawar, S. K., Dasgupta, H., & Vispute, S. (2020). Analysis of factors influencing international student destination choice: A case of Indian HE. *Journal of Further and Higher Education*, 4(10), 1388-1400.
29. Rodríguez González, C., Bustillo Mesanza, R., & Mariel, P. (2011). The determinants of international student mobility flows: An empirical study on the Erasmus programme. Higher education, 62, 413-430.
30. UNESCO (2023). Global Flow of Tertiary-Level Students. Institute for Statistics, October 2022.
31. Verbik, L., & Lasanowski, V. (2007). International student mobility: Patterns and trends. *World Education News and Reviews*, 20(10), 1-16.
32. Wen, W., & Hu, D. (2019). The emergence of a regional education hub: Rationales of international students' choice of China as the study destination. *Journal of Studies in International Education*, 23(3), 303-325.
33. Wilkins, S., Shams, F., & Huisman, J. (2013). The decision-making and changing behavioural dynamics of potential higher education students: the impacts of increasing tuition fees in England. *Educational Studies*, 39(2), 125-141.
34. Yang, M. (2007). What attracts mainland Chinese students to Australian higher education, *Studies in Learning, Evaluation, Innovation and Development*, 4(2), 1–12.

THE ROLE OF GASTRONOMY IN CREATING AND IMPROVING THE EXPERIENCE ECONOMY IN TOURISM

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ABSTRACT
Food and tourism play a major role in the modern economy. Food is a key part of all cultures, a major element of global intangible heritage and an increasingly important attraction for tourists. The connection between food and tourism also provides a platform for local economic development, and food experiences help to brand tourist destinations, as well as support local culture that is thus more attractive to tourists. Gastro tourism in most regions of the world has been and must be integrated into traditional tourist activities, although in some regions, for example in France and Italy, it becomes the main reason for visiting the destination. This paper aims to determine and analyze the factors that influence the demand for local food in tourism in order to determine which tourists are interested in local traditional food as an attraction and manifestation form of gastro tourists. Despite the obvious need, many, if not most, destinations struggle to turn local food into a resource in tourism development. Transferring local food into the tourism offer requires local food experiences - specific products or culinary practices - that are available (organised, produced, packaged, communicated) for catering and wider consumer consumption - and, of course, such food experiences must be sought after by tourists as would be economically sustainable from a long-term perspective.
Keywords: *food, tourism, tourism destination branding, gastro tourism*

1. INTRODUCTION
According to Lucy M. Long, history, or time, is a rich source of culinary otherness. There are numerous occasions when dishes inspired by the past are prepared, cookbooks with "old recipes" are printed. Such food represents a limited selection of dishes that were prepared and consumed in the past. It should be emphasized that nutrition and tourism are a special topic that enables the research of theoretical assumptions that dining is a unique form of communication between people, but also communication with the culture of the area we visit. Experiments with new flavors point to questions that can be asked about a hybrid national culinary identity. Culinary tourism in this sense combines the personal experience of social and cultural attitudes towards food. Gastronomic routes will be successful if they manage to activate the gastronomic heritage and turn it into a gastronomic experience as an attraction for tourists, at the same time differentiating themselves from the competition because visitors are looking for variety, new feelings and authentic experiences. The search for the new and unknown, which is one of the motivations for traveling, can also apply to food. Tourism certainly offers new opportunities for food consumption. A new experience with food can be twofold: new ingredients and tastes that tourists have not tried before, or a new way of preparing and delivering familiar food. Modern tourists are increasingly looking for experiences based on local identities and cultures.

In recent years, gastronomy has become indispensable in order for tourists to get to know the culture and way of life of an area. Gastronomy embodies all traditional values associated with new trends in tourism: respect for culture and tradition, healthy lifestyle, authenticity, sustainability, experience.

2. TOURISM AND TOURIST EXPERIENCE

Discussing tourism today is much more difficult than at the beginning of its development. Tourism has acquired the status of one of the most massive, dynamic and complex socio-economic phenomena of the modern era, and nowadays it has become one of the most recognizable concepts of the modern world. Given that tourism penetrates almost all spheres of social and economic development in general, it simultaneously interacts in a complex and complementary manner and is deeply incorporated into the processes of everyday life (Čavlek et al., 2011: 23). Tourism in itself is a multidimensional activity that includes a whole series of individuals, businesses, organizations and localities that are interconnected in order to offer their clients a travel experience as well as an experience. Gastro tourism is one of the most important forms of tourism, as shown by its growth trends in the world. In order for authentic, local products to differ from others and to differentiate a tourist destination from other tourist destinations, it is necessary to create an experience economy from food. The experience economy is certainly one of the elements of a tourist product that can be decisive when choosing a tourist attraction and that can leave strong traces in the experience of a tourist. The experience economy represents the creation of new value (economic and social), where the experience is an integral and starting part of the product or service, and not just their upgrade or added benefit. From the perspective of tourism and tourist offer, respecting the main motive for travel, as a request to acquire an unrepeatable, unique experience, and in parallel with the increase in tourist trips, one encounters the expansion of an increasing number of tourist products based on the economy, or more precisely on tourist experiences. Enjoying good food and drink goes hand in hand with a comfortable life. The choice of what to eat and drink is an opportunity for pleasure, because the right drink can bring greater enjoyment to whatever is eaten for breakfast, lunch or dinner. Conversely, the wrong choice has the power to ruin the experience of a meal - three times a day.

3. GASTRONOMY OF MODERN TOURISM

One of the essential tasks in the development and marketing of gastronomic tourism, therefore, is to find ways to add value to the dining experience in order to make it unforgettable. The development of gastronomic experiences is reflected in the appearance of restaurants that offer a complete package of food, entertainment and atmosphere. In a themed environment, preparing and serving food turns into an experience. Kitchens open to views. As global competition between tourist destinations increases, so does the search for recognizable products become more intense. Gastronomy is considered an important source of tourist images and experiences for tourists. Kivela, Inbakaran and Reece (1999) believe that the size of the portion and the variety of the food offer influence the strengthening of satisfaction in the food experience. Similarly, the food and experience in a restaurant can have a great impact on the sense of participation and connection with the destination, while poor quality and unsuccessful service can negatively affect health, interrupt the trip and reduce the positive experience of the destination's image (Prendergast, 2006). Gastronomic experiences for tourists are usually developed from the perspective of the 'unique' aspects of gastronomy that can only be found in that place. However, as more and more destinations develop gastronomic experiences for visitors, the issue of intellectual property becomes more acute. Countries or regions will have to protect intellectual property related to their gastronomic culture in order to maintain the uniqueness of their products.

If gastronomy can be associated with certain countries or regions, it becomes a powerful marketing tool in tourism. Authenticity has always been considered an important aspect of tourist consumption, and the search for 'authentic' local and regional foods can become a motive for visiting a particular destination. Many countries and regions around the world have begun to understand this and are using gastronomy to market themselves. A large part of the marketing activities aimed at the development of rural gastronomy is aimed at establishing and increasing the "authenticity" of local cuisine. In contrast to the appeal of tradition and contemporary forms of gastronomy found in rural areas, the marketing of urban gastronomy is often based on the positioning of the kitchen in fashion trends and modern life. Gastronomy, for example, is one of the reasons for the rise of Catalonia as a modern region in Europe (Richards 2000:21-29). The cuisine of Catalonia not only matches the current taste of many consumers for simple, healthy food, but is also associated with a dynamic region full of modernist architecture, modern art and contemporary fashion. Destination marketing through gastronomy also brings a number of benefits through complementary activities and connections, such as encouraging local agriculture, food processing and retail, raising the quality of food and strengthening the local image and identity. Tourism activities and food consumption are always interconnected due to their complementary nature. All food producers, chefs, gourmets and gastro travelers have one thing in common: the search for authenticity. Food is often called authentic if it is specific to an area, prepared in a certain way, uses traditional preparation methods, combines and/or recombines new ones with traditional ingredients, is prepared by a certain person. (Kivela, J., & Crotts, J. C.:2005:42) state that traveling and enjoying the food and drink of a destination is actually enjoying unique and unforgettable gastronomic experiences. Long, 1998:45 in his work emphasizes the authenticity of food that helps the unique experience of tourists and transfer to their daily life; the emphasis is on visiting primary and secondary food producers, food festivals, restaurants and specific sites, where tasting food and/or experiencing the attributes of specialized food producing regions are the primary motivating factors for travel ((Hall, C. M., & Mitchell, R., 2001 : 307-325).(Boniface, P., 2003:15) believes that tasting tourism is an emphasized journey to a destination for tasting food and drinks. Gastronomy embodies all traditional values associated with new trends in tourism: respect for culture and tradition, healthy lifestyle, authenticity, sustainability, experience, gastronomy represents an opportunity for revitalization and diversification of tourism, promotes local economic development, includes different professional sectors (producers, chefs, markets, etc.) and brings new applications in the primary sector. Today, food is more than food, it is also a part of local culture, a tool for agro-cultural and therefore economic development and a local aspect, which is influenced by the eating behavior of tourists. Nevertheless, each country has its own exclusive gastronomic customs on how to prepare, serve and eat, and this can be the main motivator to visit a certain destination and experience a certain culture, because local food is not only seen as a custom, but also as iconic product of a certain destination. The relationship between food and tourism can be connected with the image of tourist destinations, which is manifested in four different ways (Hjalager, Corigliano, 2000):

- the inclusion of food in tourism marketing and management has increased significantly in the last few decades. In certain destinations, food is used as an attractive lure for the eyes in brochures, videos and television programs,
- a large percentage of new products and experiences are based on heritage, which destinations use by opening traditional food businesses. Food has become the focal point of festivals and events that attract tourists as well as local residents (Getz, 1991),
- during the trip, local products are consumed that represent part of the culture. Tourism was synonymous with fun and entertainment, but also a cultural act, a cognitive and participatory moment related to the context of the environment that is considered by visiting the destination,

- hamburgers and drinks can be consumed worldwide. Food products and styles are becoming globalized, so even in some destinations, fast food is weakly connected to local culture (Hall, Mitchell, 1996).

The quality of a gastronomic product is influenced by several factors, some of which are a high-quality and standard base of foodstuffs, proper and controlled processing and processing of foodstuffs, as well as good technical and technological conditions. Through gastronomy, other forms of tourism are connected and permeated through it. Thus, for example, the Varaždin County has different and authentic gastronomic products that are prepared in authentic and traditional ways. Traditional farming and cultivation of certain products in Varaždin County have led to characteristic products that can represent regional brands with potential for national brands. It can be said that tourism is dependent on agriculture, although, on the other hand, it directly or indirectly encourages the development of all agriculture and economy, which also applies to Varaždin County.

4. RESEARCH METHODOLOGY

One of the essential elements for the external analysis of the tourist product is the study of real and potential demand. Consumers are the main drivers of innovation and their motives, tastes and needs change at different speeds, which marks the natural development of the market. To promote the sustainable development of tourism in a destination, it is important to understand gastronomic tourists and their perspective on tourism and gastronomy, as well as to know the impact on destinations. It is useful to study different gastronomic profiles and interests in order to better understand how and when to act. Measuring the tourist experience is also essential for improving, developing and understanding the phenomenon, as well as for exploiting the opportunities offered by gastronomic tourism.The aim of this paper is to analyze and determine the factors that influence the demand for domestic (local, traditional) food in tourism in order to determine which tourists are interested in such food as a tourist attraction. Despite the obvious need, many, if not most, destinations struggle to turn local food into an attractive resource in tourism development. Bringing local food into tourism requires local food experiences - specific products or culinary practices - that are available (organised, produced, packaged, communicated) for wider consumption - and, of course, such food experiences must be sought after by tourists in order for the providers to be economically viable. sustainable from a long-term perspective. Local food in production and consumption implies legal aspects of the protection of originality, but also manipulation and consumption. The combination of food and other tourist attractions currently has a strong tourist attraction because the offer of local traditional food products and culinary traditions to national and international visitors adds a new dimension of value in the image of tourist destinations and creates additional economic activity in and around the tourist destination. Nutrition is a physical need, as well as cultural and social activity. When tourists consume food at a destination, they not only satisfy their hunger, but also experience the local culture and interact with the hosts. Tourist demand for local food, however, occurs in various places and at different levels of intensity. Some tourists travel only for the gastronomic specifics of a particular region, some see local food as a by-product of their cultural experiences, and some exhibit neophilic and others neophobic behaviors. Therefore, there are differences in how to approach tourists when promoting and marketing local food. The aim of the work is to highlight the importance of gastronomic products that are prepared and their direct influence on the creation of experiences in tourism. The goals of this research, in addition to the above, are the identification and understanding of factors that influence the development and quality of gastronomic tourism.

What must be the focus in a certain destination, in order for gastronomic tourism to be recognized and become a motive for tourist visits. In accordance with the goal, the hypotheses of the work were set, which read:

- **Hypothesis H1:** The combination of food and other tourist attractions currently has a strong tourist attraction because the offer of local traditional food products and culinary traditions to national and international visitors adds a new dimension of value in the image of tourist destinations and creates additional economic activity in and around the tourist destination as much as possible for marketing entities poses specific challenges.
- **Hypothesis H2:** Culinary tourism is the pursuit of unique and unforgettable experiences in food and drink and a way of connecting local food systems with the tourist experience.

The statistical package SPSS 22.0 was used to process the collected data, and the collected primary data were analyzed using the method of descriptive statistical analysis. Below are presented the results of the descriptive statistical analysis of the sociodemographic profile of tourists (Table 1), the results of the descriptive statistics of the role and importance of food in the experience of the destination (Table 2). . A five-point Likert scale was used for measurement (determined by a scale from "1 - completely disagree" to "5 - completely agree").

SOCIO-DEMOGRAPHIC VARIABLES OF THE PERSONS SURVEYED	NUMBER OF RESPONDENTS	PERCENTAGE OF RESPONDENTS (%)
1. SEX		
Woman	158	69 %
Male	71	31 %
2. AGE		
The average age of the respondents is 37.2 years.		
3. EMPLOYMENT STATUS		
Unemployed	180	78,6 %
Employed	15	6,6 %
Student	16	7 %
Doctoral student	5	2,2 %
Retired	13	5,7 %
4. MARITAL STATUS		
Single	49	21,4 %
In a relationship	72	31,4 %
In marriage	108	47,2 %
5. MONTHLY INCOME		
To 650,00 Eura	39	17 %
From 651,00 to 850,00 Eura	65	28,4 %
From 851,00 to 1100,00 Eura	70	30,6 %
More to 1.001,00 Eura	55	24 %
6. DO YOU HAVE MINOR CHILDREN IN YOUR FAMILY?		
YES	85	37,1 %
NO	144	62,9 %
7. EDUCATION DEGREE		
HIGH SCHOOL EDUCATION	94	41%
GRADUATE LEVEL OF EDUCATION	54	23,6 %
POSTGRADUATE LEVEL OF EDUCATION	81	35,4 %

Table 1: Socio-demographic variables/general data
(Source: Author's own work)

The socio-demographic structure of the sample consisted of 221 respondents, of which 158 were women or 69%, while the average age of the respondents was 37.2 years.

The work status of the respondents is made up of 180 respondents or 78.6% employed employees; unemployed or 15 respondents or 6.6%, students 16 respondents or 7%, students 5 respondents or 2.2% and pensioners 13 respondents or 5.7%. When it comes to marital status, 21.4% of respondents are single, 31.4% are in a relationship, while 108 or 47.2% are married. The largest number of respondents, 30.6%, have monthly incomes between 851.00 and 1,100.00 Euros, while 28.4% of respondents fall into the category of monthly incomes between 651.00 Euros and 850.00 Euros, while 24% of respondents have monthly incomes higher from 1,001.00 Euros. When asked whether the minors were members of their families, 62.9% of the respondents answered that they were not their parents, while 37.1% of the respondents gave the affirmative answer. 41% of respondents have completed secondary vocational education, while 54 respondents have completed higher vocational education, i.e. graduate studies, while 35.4% of respondents have completed postgraduate studies.

	Evaluation of the destination experience through food consumption						
	Arithmetic mean (standard deviation)		Difference	95% range reliability		t (df)	P*
	There is none potential	Have potential		From	To		
Eating local food is a higher experience of local culture	3,46 (1,1)	3,92 (1,1)	-0,658	-1,0	-0,4	-4,2 (229)	**<0,001**
Local traditional food, a by-product of their cultural experiences	3,74 (1,0)	4,17 (0,9)	-0,632	-0,9	-0,4	-4,8 (229)	**<0,001**
I love local delicacies because they contribute to the experience of the destination	3,89 (1,0)	4,44 (0,9)	-0,553	-0,8	-0,3	-4,3 (229)	**<0,001**
A bad food experience will deter me from visiting again	3,79 (1,0)	4,31 (0,9)	-0,523	-0,8	-0,3	-3,9 (229)	**<0,001**
I spend several vacation days in destinations that have interesting food	3,59 (1,1)	4,23 (1,0)	-0,642	-0,9	-0,4	-4,6 (229)	**<0,001**
Food presentation must be visually attractive to me	3,64 (1,1)	4,28 (1,0)	-0,640	-0,9	-0,4	-4,5 (229)	**<0,001**
I feel joyful, romantic while tasting indigenous food	3,52 (1,1)	4,22 (0,9)	-0,706	-1,0	-0,4	-5 (229)	**<0,001**
Local dishes contain many fresh ingredients produced in the local environment	3,61 (1,1)	4,35 (0,9)	-0,740	-1,0	-0,5	-5,2 (229)	**<0,001**
Trying local food keeps me healthy	3,41 (1,1)	4,20 (1,0)	-0,783	-1,1	-0,5	-5,4 (229)	**<0,001**
Local dishes are part of the cultural heritage	3,77 (1,0)	4,49 (0,9)	-0,619	-0,9	-0,4	-4,6 (229)	**<0,001**
Local dishes are nutritious	3,98 (1,1)	4,57 (0,8)	-0,587	-0,8	-0,3	-4,7 (229)	**<0,001**
The food offer based on local and original ingredients makes the trip unforgettable	3,41 (1,2)	4,17 (1,0)	-0,756	-1,1	-0,5	-5,0 (229)	**<0,001**

* Student's t-test

Table 2: Evaluation of destination experience through food consumption
(Source: Author's own work)

The tourist experience is beginning to take on a major role in the field of tourism and leisure and is the result of intrapersonal and interactive communication between tourists and providers of tourist offers in the destination, where the gastronomic offer of food plays a significant role. The tourist experience can emotionally bind tourists to a certain destination, as indicated by the research results. The respondents rated "Consumption of local food is a greater experience of local culture" with an average score of 3.46, or 3.92, where t(df) is -4.2. "Local traditional food is a by-product of their cultural experiences" with an average score of 3.74 and 4.17 respectively, where t(df) is -4.8. "I like local delicacies because they contribute to the experience of the destination" has an average score of 4.44, where t(df) is -4.3. "A bad food experience will deter me from visiting again" has an average score of 4.31 and a t(df) of -4.3. The majority of respondents agreed with the statement "A bad experience with food will deter me from visiting again", rating the stated statement with an average score of 4.31 and t(df) -3.9. "I spend more vacation days in destinations that have interesting food" was rated with a high average rating of 4.23. Those destinations that have specific, traditionally prepared and autochthonous food, when consumed, the respondents feel romantic with an average rating of 4.22. Through the research carried out as part of this work, it can be concluded that there is a concept of tourist experience and that food plays a significant role in creating the content itself. In order for these experiences to be unforgettable, it is necessary to act on satisfaction during the stay in the destination, which is considered the most intensive phase with the greatest potential for creating experiences with the support and consumption of indigenous dishes. In order for the tourist experience to become unforgettable, four aspects must be satisfied, which are also considered the dimensions of an unforgettable tourist experience, namely affects, expectations, consequences and memory. Affects are unconscious intense experiences that play a very important role in determining the relationship between a person's body, the environment and other people, and refer to the subjective experience of what people feel or think about ("Trying local dishes makes me healthy" with an average rating of 3.41 and the food offer based on local and original ingredients makes the trip unforgettable, ratings 4.17 and t(df) -5.0. Every research, including this one, faces certain limitations that should be annulled in future research, in order to improve the obtained results. The research was conducted on a very small number of respondents and exclusively in Varaždin County, and does not reflect the opinions and attitudes of the respondents towards other experiences and consumption of different food products. Therefore, in the future, the research should be carried out in different parts of the Republic of Croatia, and the obtained results can be compared with already existing results, and thus one can gain an insight into the influence of food (indigenous and traditional) in the overall experience of the destination.

5. CONCLUSION

The attractiveness of the destination is reflected in its capacity to meet the needs of tourists. In recent research, it is claimed that the gastronomic offer of the destination has, in addition to the function of satisfying the physiological needs of visitors, a symbolic, social and entertainment-recreational role. Tourists decide on a gastronomic experience for various reasons, and they can value it differently. Not only the tangible elements of the destination (natural beauty, tangible and intangible cultural heritage, food), but also the intangible (visual effect of the food, way of serving, atmosphere) are responsible for creating such an experience. Tourism certainly offers new opportunities for food consumption. A new experience with food can be twofold; new ingredients and flavors that tourists haven't tried before, or a new way of preparing and serving familiar food. And a certain situation can contribute to food consumption, instead of an episodic experience, becoming part of a top experience (eg dinner in a good restaurant or a special place with company and an unexpected time that is well remembered - themed dinners).

The effect on memories makes such an experience superb. The creation of a superior tourist experience, which results from the consumption of food, constitutes the very essence of gastronomic tourism.

LITERATURE:
1. Boniface, P. (2003). *Tasting tourism: travelling for food and drink.* Aldershot: Ashgate, p. 15.
2. Čavlek, N., et al., (2011): *Turizam: Ekonomske osnove i organizacijski sustav*, Zagreb, Školska knjiga d.d.
3. Getz, D. (1991), *Festivals, special events, and tourism*. Van Nostrand: New York
4. Hall, M., Sharples, L.,Mitchell, R., Macionos, N., & Cambourne, B. (2003). *Food tourism around the world*. Elsevier Ltd. Oxford MA
5. Hall C. M., Mitchell R. (2006): *Gastronomy, food and wine tourism*. U knjizi Buhalis Dimitrios, Costa Carlos, Tourism Business Frontiers - Consumers, products and industry. Elsevier Ltd, Oxford
6. Hjalager, A.-M., Corigliano, M.A. (2000), *Food for tourists – determinants of an image,* International Journal of Tourism Research
7. Hjalager, A.-M., Richards, G. (2002), *Tourism and Gastronomy*, Routledge, London
8. Ignatov, E., Smith, S. (2006), Segmenting Canadian culinary tourists. *Current Issues in Tourism, 9(3), pp. 235–255*
9. Kivela, J., Inbakaran, R., Reece, J. (1999). Consumer research in the restaurant environment, part 2: Research design and analytical methods, *International Journal of Contemporary Hospitality Management, 11 (6), 269-286.*
10. Long, Lucy M. 2004. "A Folkloristic Perspective on Eating and Otherness". U Culinary Tourism. Lucy M. Long, ur. Lexington: The University Press of Kentucky, 20–50.
11. Richards, G. (2012). Food and the tourism experience: Major findings and policy orientations. In D. Dodd (Ed.), Food and the tourism experience (pp. 13-46). Paris: OECD. doi: 10.1787/9789264171923-1-en
12. Wansink B., Cheney M. & Chan N. (2004): Exploring comfort food preferences across age and gender. Physiology & Behavior
13. Wolf, E. (2006), Culinary Tourism: The Hidden Harvest, Kendall/Hunt Publishing, Dubuque

THE REGULATION OF THE SHARING ECONOMY AND THE ROLE OF GOVERNMENTS

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ABSTRACT

The rise of the sharing economy as a component of the digital economy is significant, and its importance will continue to grow. In addition, the pandemic has increased its spread. Recently, regulation has emerged as a vital concern. Moreover, the government's role and its intervention are under discussion. This study investigates the government's involvement in previous economies and the sharing economy of today. The study also examines the relationship between previous and present economic activities. The research takes extensive use of the author's thesis by reinterpreting crucial parts of comparisons, especially for fundamental economic approaches such as classical economics and comparative economics. Our research reveals that government involvement in the sharing economy is essential and that governments must adopt a global approach.
Keywords: *government role, policies, regulations, sharing economy, traditional economy*

1. INTRODUCTION

The sharing economy is an important part of the digital economy, and its rapid increase plays a crucial role in its distinct growth. Besides the development of the sharing economy, the role of governments and regulations emerged as a major concern. The study emphasizes the importance of government involvement by incorporating comparisons from classical and comparative economics. Moreover, this study focuses on the global approach of governments to applying policies and regulations with a beneficial approach. For the sharing economy to reach its full potential, it is essential to examine the relationship between traditional economic approaches and the sharing economy.

2. SHARING ECONOMY – GOVERNMENT ROLE

The role of the government in the sharing economy is vital, especially in the environment of new economic development as part of the digital economy. Today's sharing economy faces several difficulties, especially with the cooperation of the government. The existing regulations have been settled and applied for a long period of time, whereas the sharing economy, as part of the digital economy, is just coming into economic patterns. Therefore, major concerns are raised, such as fair competition and regulatory oversight. Botsman, R. (2013), highlights the stance of the government's role in the sharing economy and links it with the best cooperation by providing clarity and an extensive definition of the sharing economy. This facilitates the establishment of a common understanding and enables the development of effective governance and regulatory frameworks. Additionally, Lee, M. (2016) also explores the different regulatory approaches for the sharing economy. The author exposes that the most efficient approach of the government and its role with policies can be vital with the adoption of innovative policy roles.

3. ADAM SMITH – CLASSICAL ECONOMICS

The primary reasoning behind the trust is quite familiar with the metaphor of Adam Smith's invisible hand theory as he emphasizes the one-to-one relationship between seller and buyer, without any third parties. He actually demonstrates that the relationship functions realize very well without intervention. The reason for this is the possibility of losses for both parties should they choose to take advantage of the trade.

Such as self-interest and cheating attempts or reputation. It is easily vulnerable from any mistakes. The seller's poor reputation will probably result in diminished performance. Therefore, this fear produces a high level of agreement between buyer and seller. In other words, the third participant will not be required at all for controlling purposes. For instance, the prisoner dilemma. Both parties should completely agree on a single point. Otherwise, it will result in the worst possible outcomes. Overall, the Invisible hand is a controversial topic. However, the central idea here is the natural line between seller and purchaser, eliminating the need for third-party control. The same concept applies to the sharing economy. Individuals must rely heavily on mutual trust. Nowadays, social profile information, network connections, earned badges, etc., demonstrate the reliability of both buyer and seller. Regarding the sharing economy, both parties must exhibit confidence. For example, the BlaBlacar Community Platform. Visible comments, ratings, and information are applicable to one another (Ilhan, A. 2017).

4. COMPARATIVE ECONOMICS

Since decades, various scholars have debated the required role of the government. However, establishing the government's role permanently is difficult. Particularly, each nation has a unique structure. Consequently, the roles of government derive primarily from their particular needs. However, there are instances in which the government's roles diverge significantly from what they should be for the nation's benefit. North Korea and Cuba, for instance, compared to Western Europe and the United States. Cuba and North Korea have established their primary government dominance. In other words, the government possesses essential authority in significant fields. Such as the economic system and the social structure. Moreover, governments can intervene in the economy quickly and easily because the government's position is sufficiently strong and dominant to make decisions. In addition, Western Europe has a larger economic impact. In some instances, the impact of the government on the economy can be readily observed. Such as government involvement in various fields. Such as the Hungary Lottery Company C. Keszthelyi, (2014) or a few government acquisitions of production companies (Ilhan, A. 2017). Notwithstanding, a few instances demonstrate the existence of common boundaries and fields in which governments should play a crucial role within their respective nations. In this section, I will discuss the fundamental circumstances in which government involvement is required. First, the need for a government is recognized after World War II. Stiglitz, J. E., & Stiglitz, J. E. (2000) explains that countries struggle to deal with crises. Not only did economic shocks occur, but unemployment rates also rose, and inflation rates were relatively high. Due to social and economic factors, governments tend to require greater control. Governments had to play a crucial role in terms of economic recovery and national welfare. Indeed, these are the primary goals of government. However, in the 21st century, this ideology varies according to country profiles. There are instances of governments playing a supporting role, while others remain quite dominant. We cannot ignore the government's role in the economy. Governments have always played particular roles in the economy, and national structures always influence governments' perspectives. Consequently, government policies and perspectives that intervene in the economy continue to be diverse (Ilhan, A. 2017).

The most fundamental perspectives regarding the relationship between the market and the government are as follows:
- *Classic Liberal Perspective,*
- *The radical Perspective,*
- *Conservative Perspective,*
- *Modern liberal Perspective.*

4.1. The classic liberal perspective

It supports the government's function as the best when it plays the smallest role. In other words, governments should not play a distinct role in the market. According to Adam Smith, the government is responsible for managing the money supply, printing currency, levying taxes to pay for public goods, and focusing on national defences. Including harbours, highways, and military strength. Adam's philosophy is referred to as the invisible hand. According to the new terminology, the function of the government is that of a third participant, which should not intervene in the economy in any way. Adam contends that the need for demand and supply can generate leverage and, thus, equilibrium. In addition, as long as the government does not intervene, this strong integration and corporation can produce effective outcomes. According to Friedrich Hayek, the government's activities regarding the money supply led to devaluations. Therefore, currency controls were handled by private companies. Additionally, business liberalization is required. Privatization was expected to manage the education systems and judicial systems. Therefore, efficiency is the primary objective of the market, while the government has the least control power. Nonetheless, some gaps could not be filled without government intervention. Such as resource allocation, worker rights, and environmental protection (Ilhan, A. 2017).

4.2. The radical perspective

The radical viewpoint maintains that the common good always plays a crucial role. In other words, playing a part is always important. Government should therefore be held entirely accountable. Additionally, citizens ought to be able to participate in it. Non-Marxian viewpoints were in favour of this worldview. There were indications for a Marxian perspective, though, which saw less need for the government in the economy. Because of its constantly changing conditions, the government can play a role in any society (Ilhan, A. 2017).

4.3. The conservative perspective

Conservative viewpoints portray themselves as the powerful opponent of the people. In other words, the government ought to be prepared to deal with any challenges brought on by citizens it disagrees with. In this situation, the public's attitude toward challenging authority could lead to totalitarianism, fascism, or communism. Additionally, this worldview may be driven by self-interest, and governments, therefore, only aim to maximize its benefits (Ilhan, A. 2017).

4.4. The modern liberal perspective

The fourth viewpoint is the modern liberal viewpoint, which views the government's primary function as balancing economic requirements. In other words, it asserts that as the economy increases, so should the government's position. Therefore, an excellent and balanced partnership and relationship may be observed between governments and the economy.

Figure following on the next page
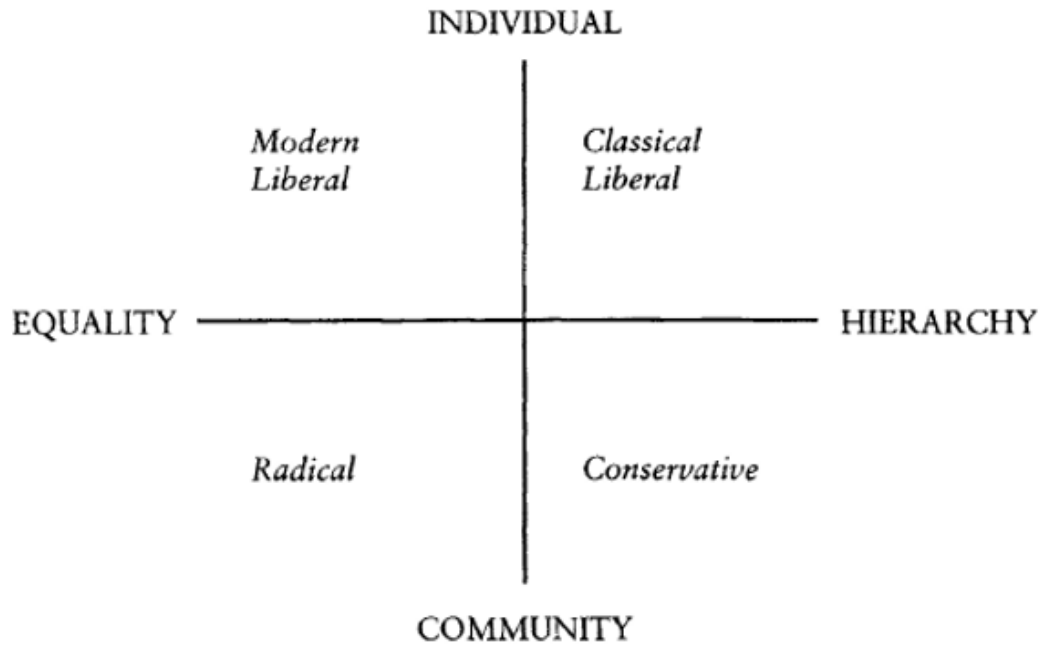
Figure 1: Course Material, Comparative Economics\ CUB

The figure above summarizes the four main market and government viewpoints based on four pertinent factors. The current dominating ideology is supported by modern liberalism because of the government's role, which focuses on preserving both the rights of individuals and businesses. Additionally, the government's involvement in the market and function within create economic equity (Ilhan, A. 2017).

5. CONCLUSION
This study show the needs for sharing economy and government involvement. However, The sharing economy's dynamics and characteristics require optimal government action. The sharing economy is more flexible than traditional economies, which were dominated by government involvement. Governments are expected to stimulate innovation while their policies protect the economy. The authors, Hamari, J., et al. (2016), highlight that governments are increasing innovation and stimulating policies to protect the economy and, therefore, collaborative consumption. In conclusion, the sharing economy requires government involvement with an approach that differs from previous economic activities. Therefore, governments need to have the role of applying the regulative approach while optimizing the supportive role. Schneider, H., and Hyvärinen, A. (2020) expose that the balance between supporting the sharing economy and protecting it with regulatory approaches with the support of gig workers creates a great balance. A new economic framework may foster emerging economies, especially the sharing economy.

LITERATURE:
1. Botsman, R. (2013). "The Sharing Economy Lacks a Shared Definition." *Fast Company.* Retrieved from: https://www.fastcompany.com/3005487/sharing-economy-lacks-shared-definition.
2. C. Keszthelyi, (2014). "Hungarian state-owned lottery company revenue climbs 14%," *Budapest Business Journal*

3. Hamari, J., Sjöklint, M., & Ukkonen, A. (2016). "The Sharing Economy: Why People Participate in Collaborative Consumption." Journal of the Association for Information Science and Technology, 67(9), 2047-2059.

4. Ilhan, A. (2017). The regulation of the sharing economy:"The Role of the Government in Term of the Regulation towards the Sharing Economy" *(Doctoral dissertation, BCE Társadalomtudományi és Nemzetközi Kapcsolatok Kar).*

5. Lee, M. (2016). "Government Intervention in the Sharing Economy: An Analysis of the Regulatory Approaches." *Information Systems Research*, 27(4), 823-841.

6. Schneider, H., & Hyvärinen, A. (2020). "Navigating the Sharing Economy: *A Systematic Literature Review on Sharing Economy Regulation and Its Effects." Sustainability*, 12(6), 2461.

7. Stiglitz, J. E., & Stiglitz, J. E. (2000). Economics of the public sector, *"Course materials, Comparative Economy Lectures, CUB".*

DIAGNOSTIC ANALYSES REGARDING POVERTY RISKS AND QUALITY OF LIFE AMONG THE ELDERLY IN ROMANIA

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ABSTRACT

Ageing is an overall global trend affecting the entire population at different rates and levels. The elderly are often considered a vulnerable group, with specific particular needs due to the physiological limitations and fragility characteristic of the ageing phenomenon. Elderly face many social risks and among them is poverty which affects their quality of life and which takes many forms and facets: income poverty, severe and extreme poverty, persistent poverty, material and social deprivation, social marginalization, social exclusion, social inequality, etc. The purpose of this paper is to analyse and disseminate an up-to-date and dynamic picture of poverty among the elderly in Romania. Analyses of relevant indicators, based on current statistical data and in dynamics, will highlight a certain profile of elderly vulnerabilities, useful to support policies in the field. The dynamic analyses will highlight the precariousness and magnitude, but also the persistence of the risk of poverty faced by the elderly in Romania. The relevant indicators highlight the risk of poverty, severe material and social deprivation, persistent poverty, poverty or social exclusion, even if at national level it is not the elderly who face the highest poverty rates, but especially young people and children. But, nevertheless, the segment of the elderly population must be actively and continuously considered and supported in order to reduce poverty and social exclusion and to increase their quality of life.
Keywords: Elderly, Indicators, Persistent Poverty, Poverty Risk, Poverty or/and Social Exclusion, Severe Material and Social Deprivation

1. INTRODUCTION

Ageing is an overall global trend affecting the entire population at different rates and levels. The elderly are a vulnerable group, with specific particular needs due to the physiological limitations and fragility characteristic of the ageing phenomenon. The effects of the ageing process on the development of economic and social life, as well as on the perspectives of demographic developments, are observed over time, by reducing the dependency ratio, causing disturbances at the level of the school population, the fertile population and the working-age people, with implications and complementary effects on short and long term. Like most European countries, Romania faces complex economic and social consequences regarding a population in a slow but continuous process of demographic ageing. On the other hand, the decrease in the fertility rate and the increase in life expectancy are making the younger generations less and less numerous (due to the fertility rates located below the replacement levels) and both the ageing of the population to increase more and more. If migration is added to these factors, then the ageing of the population at national level is even more pronounced. And if reference is also made to the migration of the working-age people, then the structure by age groups of the population will continue to change, in the sense of reducing the number and share of children and young people up to 14 years and the adult working age population (15-64 years), in parallel with the increase in the number and share of the elderly (65 years and over). Regarding the socio-economic changes imposed by the transformation of the Romanian economy into a market economy, they generated changes in the structure of the active population. The National Institute of Statistics in Romania [2018] specifies that the ageing of the population has a strong influence on the labour market, in the sense of decreasing the

number of the young active population, keeping the active adult population at high levels and increasing the number of elderly people who either continue to participate in the economic activity or become beneficiaries of social assistance (pensioners). On the other hand, it is imperative that society be permanently prepared to create, maintain and develop an economic and social environment suitable for an ageing population, by continuously adapting the labour market and the social protection / assistance system to the dynamics of the new demographic changes, to support vulnerable segments and to increase the resilience of these contingents. In order to reduce the economic and social risks induced by the ageing phenomenon, policies and strategies are implemented at national and international level, aimed to support these population groups and to minimize their specific vulnerabilities. Among these many social risks faced by older people is poverty, which affects their quality of life and which takes many forms and facets: poverty, income poverty, severe and extreme poverty, persistent poverty, material and social deprivation, severe material and social deprivation, social marginalization, social exclusion, socio-economic inequalities, in-work poverty in old age, etc. These risks will be analysed in this paper to highlight the magnitude and persistence of poverty among the elderly.

2. BRIEF REVIEW OF LITERATURE

Older people have been constantly in the light of international and national policies and strategies, as the phenomenon of population ageing implies the need to pay more attention to the special needs and problems faced by elderly, especially in terms of the risk of poverty or social exclusion, but not only. As the configurations of the elderly reactions to the social changes are predominant, amid the dynamics of the economic and social environment that had and has also direct effects on older people, in conjunction with their multiple needs, they continuously make the resilience of these vulnerable groups require permanent reconfigurations of policies and strategies, given also by the new strategic cycles, but also by the need to respond to the new challenges. Continuously conducted studies, as well as the permanent dissemination of the main results, contribute to the knowledge of the picture of poverty and associated phenomena, to the relief of the contingents and the profile of vulnerable facing these social risks, to the multitude of needs, causes and factors that intersect, overlap and/or aggregate and intensify their effects, to the awareness of the impact produced by the dynamics of economic and social changes, especially among the elderly.

2.1. International studies and papers

Continuously evaluation and monitoring studies are carried out at international level, as these are particularly important to highlight the profile of the elderly facing certain vulnerabilities in present or over a longer period of time, being important not only the magnitude of poverty, but also its persistence and associated phenomena (material deprivation, severe material and social deprivation, severe and extreme poverty, social marginalization, social exclusion, etc.). The purpose of these ongoing efforts is to analyse comparatively, at EU and non-EU countries level, the risks, experiences and opportunities that can contribute to support this target group, in order to identify the main ways of action to reduce poverty, to increase the quality of life, and also to prolong the active life of elderly, for a prompt and targeted response to the multitude and diversity of needs that this group faces, especially when they refer to the risk of poverty and the associated phenomena, inextricably linked. Such a study is conducted by Rissanen and Ylinen [2014] which discussed certain problems faced by the elderly and described the issues and processes that lead individuals into poverty on individual, community and political levels. Finally, based on the existing qualitative research literature, the authors described and highlighted a certain profile of the elderly facing poverty and the experiences of poverty from the well-being perspective.

Also, poverty is seen as a current challenge for central, but also for local units, at the municipal levels, which are continuously looking for solutions to support poverty reduction, in the same time with the implications of population ageing. In this sense, Cwiek, Maj-Wasniowska and Stabryla-Chudzio [2021] analysed the relationships between the ageing of the population and the assessment of the extent poverty at the municipal level, in order to continuously know the targeted contingents and to find resources to support and to improve their quality of life. Also, other authors, such as Iparraquirre [2020], dedicated their efforts to an important starting point, namely the alternative conceptualization of poverty, material deprivation and social exclusion, but also the multidimensionality of these phenomena, their persistence, and other construct and topics close to the study of economic aspects and the issue of population ageing, in order to quantify and outline a picture of these incidences within the elderly. Other authors analysed the multidimensionality of poverty among the elderly, and Panda and Mohanty [2023], based on the analysis of specific indicators, deepened the multidimensionality of poverty and ageing measured in the social, economic, health / sanitary dimensions, etc., using a set of 9 social indicators to highlight how much the elderly are affected by these social risks. Also, since poverty has a specific multidimensionality, the specialised literature provides numerous studies and analyses dedicated to the component aspects of poverty, and Alkire and Foster [2011], considering the multiple scope of causes and factors that generate and support it, the quite numerous contingents, the persistence and magnitude of poverty, the diversity of needs and the identification of targeted response paths, proposed a new methodology for multidimensional poverty measurement. These aspects were further developed by Alkire and Seth [2015] who analysed the multidimensionality of poverty, and designed an adaptation of the multidimensional poverty index MPI proposed by Alkire and Santos [2010] and reported by UNDP's Human Development Reports in 2010. Other authors such as Muis, Agustang and Adam [2020] analysed poverty among the elderly under a multitude of socio-demographic aspects, the distribution of work, health problems and social protection granted to the elderly, to capture this diverse palette of needs and to provide a starting point for appropriate actions to increase the quality of life for this target group. Also, to define the profile of the elderly facing the risk of poverty, the analyses of the main determinants are particularly important, and Peng, Fang et al. [2019] identified, through certain regression analysis models, the differential effects of poverty determinants in the poverty spectrum, projecting a certain profile of poor people, on different poverty thresholds, depending on the depth of this social risk. Other studies have explored different factors that contribute to high risks of poverty among the most vulnerable population, and authors such as Zhou [2020] analysed the nation's economic landscape, gender parity obstacles, and the demographic crisis, and his study presented how the mix of current labour market and pension policies affects the elderly female population, to support this segment by suggesting specific policies to improve the prospects, including financial ones for people, especially women, after retirement. Determinant analyses have been carried out numerous times and under different aspects, so Rahayu, Wibowo and Safitri [2022] highlighted the determinants of poverty and analysed some relevant indicators such as levels of poverty, education, health and labour force participation among the elderly population, considering the multidimensionality of the aspects that non-monetary poverty includes and that must be treated in an integrated manner, as in a complex system where all these aspects intertwine, amplify and potentiate their effects.

2.2. National studies and papers

Also, at national level there are continuing concerns about the analysis of poverty, both in terms of the total population and for certain vulnerable groups, including the elderly, who have multiple needs and who are the target population of many social policies. Thus, older people are the focus of national strategies such as the National Strategy on Long-Term Care and Active

Ageing 2023-2030 - which aims to increase the number of elderly people who manage to live an independent life as long as possible and to improve the access to adequate long-term care services for dependent old persons. On the other hand, as older people are part of vulnerable groups, especially single or dependent ones, they are also constituted in target groups within the National Strategy on Social Inclusion and Poverty Reduction 2022-2027, combating the effects of poverty and social exclusion also on the elderly, especially among those dependent ones faced this risk or placed in another vulnerable situation. So, the elderly are in the list of specific groups of the national action plan also in this current strategic cycle regarding the poverty alleviation. The extension of working life among the elderly is supported and even encouraged by other strategies, and the National Employment Strategy 2021-2027 concerns the elderly, especially in terms of mentoring programs for training and integration of new workers, relying on the gained experience and the benefits of these programs that elderly could implement. In addition, a continuous increase in the number of workers aged 60+ is expected until the year 2030, as Lincaru mentioned [2008]. Whereas it is supported the promotion of the concept of active and healthy ageing, so that all the elderly are able to continue their working lives in good health, these measures of activation and maintenance on the labour market are correlated with other programmatic documents in the field, e.g., those concerning health status. In this regard, the National Health Strategy 2023-2030 aims to maintain and improve health, with preventive and prophylactic, palliative and long-term interventions for the elderly. On the other hand, national strategies concerning the education system do not exclude the participation of elderly, on the contrary, encourage them, especially in terms of lifelong learning, aiming to improve the quality and volume of counseling services regarding the learning process for older people, so that they can observe the value of lifelong learning, especially for everyday life. In action plans, the counseling services focus on both individual needs, as well as on age-specific ones, such as health, finance, the benefits of technology, etc. In this regard, it is expected that these elderly will become motivated to take part in learning activities. On the other hand, the elderly are the direct target of an autonomous body of public and national interest – National Council of Pensioners' Organisations and the Elderly CNOPPV. This institution has a national advisory role in establishing and implementing policies aimed to protect the rights and freedoms of pensioners and the elderly and proposes to the Government programs for the continuous improvement of conditions for appropriate life among them. Thus, the organisation constantly conducts dedicated analyses and studies that concern the elderly segment of the population. Thus, related to the issue addressed in this paper, we list only some of the latest analyses and studies carried out under the auspices of CNOPPV, including: Dinu [2022], Simion [2022], etc., dedicated to poverty dynamics, social marginalization and social exclusion among the elderly, the dynamics and prevention of these social risks or the analysis of the effects of social change on the elderly, etc. Also, similar actions are carried out in this sense by the team formed by Ghența, Matei, Mladen and Bobârnat focused on the issue of the elderly, analyzing different perceptions from the perspective of poverty and social protection Ghența [2019], or of the main determinants of social exclusion Ghența et al. [2021], etc., also by other national experts. Therefore, a lot of analyses and studies are carried out at international and national level, not only to explore literature review, or alternative conceptualizations, especially where complementary multidimensional aspects are concentrated, but also to analyse the factors and causes that generate these vulnerabilities. All these assessment and monitoring actions must be carried out constantly to know the status and, based on real and validated foundations, to act accordingly in order to support the elderly and to increase the quality of life among them. In this respect, the paper is also in line with the dissemination of analyses and studies carried out continuously, by diagnosing relevant indicators to highlight the situation of the elderly, in quotas and profile, as well as evaluation and monitoring some aspects of the issues and increased needs to minimize the social risks of these vulnerable segments of the population.

3. DYNAMICS OF POVERTY AMONG THE ERDELY

Certain relevant indicators will be analysed, in dynamics and structure, in order to highlight the magnitude and persistence of poverty and associated phenomena among the elderly in Romania and compare to some EU27/EU28 countries panel, but also with the European average.

3.1. Dynamics of poverty or social exclusion risk

One of the key indicators of the European and National Strategy on Social Inclusion and Poverty Reduction is the at-risk-of-poverty or social exclusion rate (AROPE) which is a composite indicator adopted at Union level and represents the share of people at risk of poverty or social exclusion in the total population.

3.1.1. Dynamics of poverty or social exclusion risk among the total population

In 2021, approx. 95.4 million people in the European Union were exposed to poverty or social exclusion, which accounted for 21.7% of the total population; the incidence is higher for women (50.85 million women, 22.6%) than for men (44.53 million men, 20.7%). If in the period 2017-2019 the risk of poverty or social exclusion for the entire EU population was placed on a decreasing trend, from 22.4% to 21.1%, and later, during 2019-2021, there was an increasing rate, by 0.6 percentage points, from 21.1% to 21.7%, respectively an increase of 3.18 million people. On the other hand, the number of persons facing this risk decreased in 2021 compared to 2017 by over 2.75 million people, which is a positive aspect. In the last 3 years there have been countries where the number of people faced poverty or social exclusion has increased (Denmark, Germany, Spain, France, Italy, Austria, etc.), but also countries where their number has decreased (Bulgaria, Romania, Czech Republic, Estonia, Cyprus, Lithuania, etc.). The difference from the EU average (21.7%) remains substantial, and Romania has the highest risk of poverty or social exclusion among European countries (34.5%), exceeding Bulgaria (31.7%) and the whole country panel in 2021. Thus, in Romania, the poverty or social exclusion rate registered high values over time, being almost 2 times higher than the EU average in 2017, subsequently, the gaps narrowed, the rate exceeds only 1.6 times the EU average in 2021. However, a rate of almost 35% in 2021 indicates a high level of poverty or social exclusion at national level. In the period 2017-2021, at the level of the total population, the trend of risk of poverty or social exclusion was continuously decreasing, by 8 percentage points, from 42.5% to 34%. In absolute terms, 8.37 million people were subject to this risk in 2017, so that 5 years later, their number would decrease by 21.3% and reach 6.59 million people. Thus, in dynamics there is a continuous and significant reduction of poverty or social exclusion in total population at national level.

3.1.2. Dynamics of poverty or social exclusion risks among the elderly aged 65 and over

At EU level, the number of elderly facing this risk has increased in dynamics, so that the incidences have started from 18.5% in 2017, and reached at 19.5% in 2021. In absolute values, this meant that the number of people aged 65 and over who faced poverty or social exclusion increased continuously in 2017-2021, from 15.61 million to 17.68 million persons. Thus, although at Union level the total population in poverty or social exclusion decreased in 2021 compared to 2017 by 2.76 million people (by 2.8%), the elderly population aged 65 and over recorded a sharp impoverishment, with 2.08 million people (with 13.3%) in this period. Even though the Union's poverty or social exclusion rates are high (19.5% in 2021), there are countries where this risk has particularly high impacts, so the gaps between countries, including those compared to the European average, are particularly significant: Latvia (45.9%), Bulgaria (45.7%), Estonia (41.6%), Lithuania and Romania (38.7%), Croatia (33.3%), etc. At national level, the accelerated decrease rate in the incidence of poverty or social exclusion recorded in the total population has also been maintained among the elderly population aged 65 years and

over, so that, if in 2017 a risk of 45.6% (1.6 million people) was registered, it decreased considerably over time, reaching 38.7% in 2021 (1.4 million people).

a) Total population   b) Elderly (aged 65 and over)
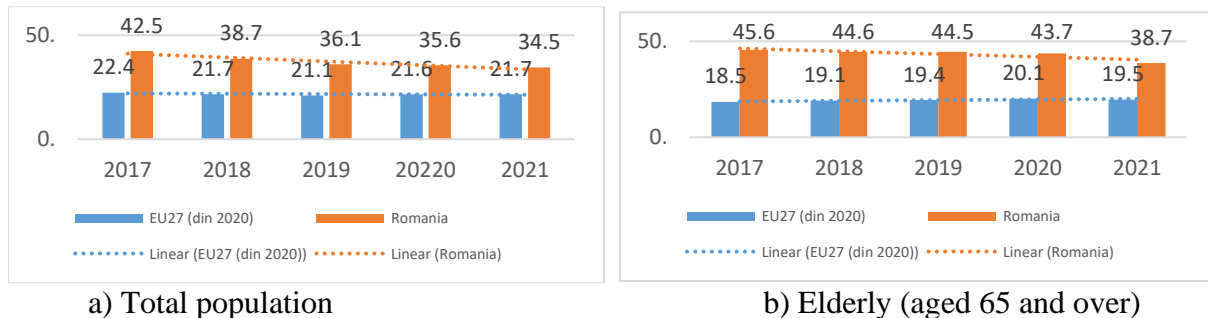
Figure 1: Risk of poverty or social exclusion AROPE, Romania and EU average, 2017-2021 (%)
(Source: Eurostat [ILC_PEPS01N], last update 10/05/2023)

With all this declining trend, it can be concluded that the national poverty or social exclusion incidence (the AROPE indicator) remains high for 2021 both in the total population, especially for the elderly, where the incidence even exceeds the national average by 4.2 percentage points.

3.2. Dynamics of poverty
Another key indicator of the European and National Strategy on Social Inclusion and Poverty Reduction is relative poverty (at-risk-of-poverty / income poverty) which shows the share of people at risk of poverty in the total population, respectively those people who have a disposable income per adult-equivalent lower than the poverty line. The indicator is relevant in the context of monitoring the National Strategy for Sustainable Development, which aims to reduce income inequality and poverty by 2030, as well as the National Strategy on Social Inclusion and Poverty Reduction which had targets set for both 2020 (and which covered the period 2015-2020), as well as for the time horizon 2027 (covering the current period 2022-2027). Continuous monitoring of this indicator, together with other relevant social indicators from national strategic agenda are therefore in response to the European targets for the common goal of poverty reduction, increasing the social inclusion and the quality of life.

3.2.1. Dynamics of poverty risk among the total population
In 2021, more than 73.65 million people in the EU were in poverty, representing 16.8% of the total population, with a higher incidence for women (39.18 million women, 17.4%) than for men (34.47 million men, 16%). If in the period 2017-2019 the risk of poverty for EU entire population was placed on a decreasing trend, from 16.9% to 16.5%. Later, during 2019-2021, there was an increase in the incidence of poverty by 0.3 percentage points, from 16.5% to 16.8%, respectively an increase of 1.55 million people, almost 2 times lower than the values of the poverty or social exclusion risk. On the other hand, the number of persons in poverty decreased in 2021 compared to 2017 by almost 500 thousand people, which is a positive aspect, in line with European strategies to reduce poverty incidence. In the last 3 years there have been countries where the rate has increased (Spain, France, the Netherlands, Austria, etc.), but also where it has decreased (Czech Republic, Estonia, Cyprus, Romania, etc.). The difference from the EU average (17%) remains substantial, Romania (22.5%) with Latvia (23.4%) and Bulgaria (22.1%) have the largest share of poverty, exceeding the 22% threshold, that means more than 1 in 5 people in poverty in 2021. Thus, in Romania, the poverty rate registered high values, being 1.3-1.5 times higher than the EU average, so that a rate of 22.5% in 2021 indicates a high level of poverty, even if it has placed in recent years on a decreasing trend compared to 2014-

2016 period. Even if Romania is committed to contributing to the central target of the National Strategy on Social Inclusion and Poverty Reduction for the period 2015-2020, respectively to reduce the population at risk of relative poverty after social transfers by 580 thousand people, from 4.99 million in 2008 to 4.41 million in 2020 (according to the National Strategy, pp. 6), this target has not been achieved, so the reduction between the 2 years was with only 336 thousand people, from 4.86 million people in 2008 (updated Eurostat data) to 4.52 million people in 2020 at national level. The National Strategy on Social Inclusion and Poverty Reduction for the period 2022-2027 provides as a central objective to achieve by 2027 a reduction in the number of these people in poverty by at least 7% compared to the reference value for 2020.

3.2.2. Dynamics of poverty risk among the elderly aged 65 and over
At EU level, the number of elderly people facing poverty has increased significantly in dynamics, so that the rates of this risk started from 13.2% in 2014, reaching 16.8% in 2021. In absolute terms, this meant that the number of people aged 65 and over who faced poverty increased continuously in 2014-2021, from 10.58 million to 15.18 million people.
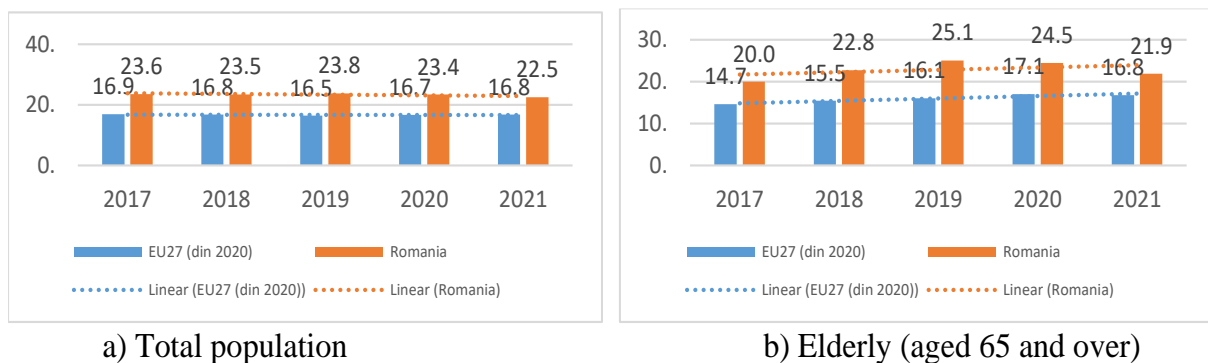
a) Total population   b) Elderly (aged 65 and over)
Figure 2: Risk of poverty AROP, Romania and EU average, 2017-2021 (%)
(Source: Eurostat [ILC_LI02], last update 19/05/2023)

Thus, although at Union level, the total population in poverty decreased in 2021 compared to 2017 by 483 thousand people (by 0.7%), the elderly population aged 65 and over recorded a sharp impoverishment, with 2.74 million people (with 22%). Even though the Union's population 65 years of age and older, poverty rates are high (16.8%), there are countries where this risk has particularly high impacts, so the gaps between countries and the EU average are particularly significant: Latvia (44.6%), Estonia (40.6%), Lithuania (35.9%), Bulgaria (34.6%), Croatia (32.4%), Malta (28.1%) and Romania (21.9%), in some countries even exceeded the EU average 3 times, which highlights significant gaps even in the last year of reference, 2021. At national level, the rate of decline in the incidence of poverty has been maintained among the elderly population aged 65 years and over, but only since 2019, so that until that year, the trend had a clear increase in poverty (e.g., from 14.4% in 2012 to 25.1% in 2019). The both incidence rates have been declining in the last 3 years, the poverty rate among the total population (22.5% / over 4.3 million people) and the elderly (21.9% / over 800 thousand people) remain high in 2021. These high incidences are acutely felt by large population, especially by vulnerable elderly people and who, the vast majority can no longer supplement their income to exceed the poverty line, but on the contrary, these incomes are eroded by high price / inflation levels, which do not cover the increases in incomes / indexation of pensions.

3.3. Persistent risk of poverty
The persistent risk of poverty shows the percentage of the population living in households where equivalent disposable income has been below the poverty risk threshold for the current year and at least two of the last three years. Its calculation requires a longitudinal instrument, through which individuals are tracked over four years.

3.3.1. Dynamics of persistent risk of poverty among the total population
The rate of persistent risk of poverty for EU total population had a constant evolution in the decade 2010-2020, oscillating between 10.2-11.3%, so by only 1 percentage point. Regarding to the country panel, the gaps have been much stronger, including the annual increases (even by 3 percentage points in Lithuania, for example), so that the gaps between countries, but also compared to the European average are significant. In 2020, the highest rates of persistent poverty in the total population are in Spain (17.7%), Bulgaria (17.3%), Romania (17%), Lithuania (16.2%), Latvia (13.3%), Croatia (13.1%), etc., well above the EU average (10.7%). In the following year, even if the rates differ, the country panel is generally maintained, with high persistent risk of poverty rates in these countries. Unfortunately, Romania has the highest incidents, so they were high during the decade 2010-2020, almost double the EU average, which shows a high persistent risk, but also an important magnitude. The maximums of the period 2014-2018, of 19-20% were subsequently more temperate, but remained at significant levels.

3.3.2. Dynamics of persistent risk of poverty among the elderly aged 65 and over
People aged 65 and over have a significant chance of being in persistent poverty. Thus, at Union level, the percentages are similar those recorded in the total population, the rate of persistent poverty among the elderly population oscillating between 9.4-11.7% in 2010-2020 period.
Instead, at national level the persistent risk of poverty is particularly high, reaching 17.3% in 2021, otherwise many elderly people find in persistent poverty, which increases the likelihood of remaining in poverty even longer. In these situations, among these vulnerable elderly people, poverty is accelerated from year to year due to rising inflation and capping incomes, especially those from pensions, or as a result of insignificant increases in these incomes in imbalance with rising food and non-food consumer prices, including housing and services.
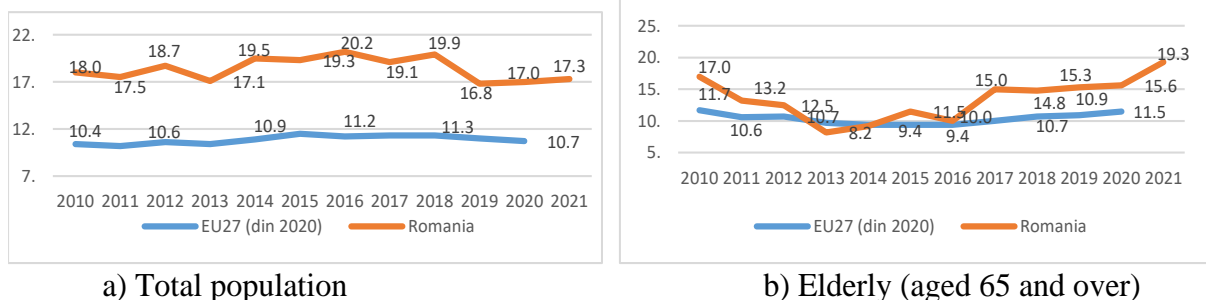
a) Total population   b) Elderly (aged 65 and over)
Figure 3: Persistent risk of poverty, Romania and EU average, 2010-2021 (%)
(Source: Eurostat [ILC_LI21], last update 10/05/2023)

The fact that persistent poverty in Romania has worsened in recent years, increasing from 8.2% in 2013 to 17.3% in 2021, almost doubling its value, so that not only is the risk maintained in a long dynamic, but also the incidence of persistent poverty is maintained at high values, and also the incidence among the elderly. All these social and economic risks will make the vulnerabilities significantly exacerbated and erode the quality of life of this population group.

3.4. Dynamics of severe material and social deprivation
Other indicators of the European and national strategy on poverty reduction refer to material and social deprivation and severe material and social deprivation. Deprivation may contain several components related to insufficient income, difficulty in purchasing goods and services, but also related to housing costs. This indicator is part of the risk of poverty or social exclusion defined in the EU 2030 target, and is the main factor associated with the risk of poverty or social exclusion. At the same time, this is a target indicator of the National Strategy on Social Inclusion and Poverty Reduction 2022-2027, which stipulated that the number of these persons should be reduced by at least 20% in 2027 compared to the reference value for 2020.

3.4.1. Dynamics pf severe material and social deprivation among the total population
In 2021, more than 27.06 million EU people faced severe material and social deprivation, representing 6.3% of the total population. In the dynamics of the last 5 years, the indicator did not have particularly significant variations, so it started from a value of 7.8% and reached 6.3% in 2021%. This decrease of 1.5 percentage points over 5 years meant that almost 6 million EU people came out of severe material and social deprivation, which is a positive aspect. Instead, nationally, the incidence is almost 4 times higher than the EU average, so that in 2021 over 23% faced this risk (4.41 million people). This incidence, almost 4 times higher than the European average, shows a large gap in 2021, but which decreased compared to 5 years ago. At national level, the trend of the indicator was a continuous decrease in the period 2017-2021, with a significant rhythm, respectively by 9.3 percentage points, which has meant that in the last 5 years, almost 2 million people have emerged from the state of severe material and social deprivation. Maintaining the downward and further incidence of the indicator would lead us to assume that it could reach the national strategic target for the period 2022-2027.

3.4.2. Dynamics of severe material and social deprivation among the elderly aged 65 and over
People aged 65 and over have a significant probability of being in severe material and social deprivation. Thus, at EU level, the percentages are similar those recorded in the total population, the deprivation rate for elderly oscillating between 5.3-6.8% in 2017-2021 period.

a) Total population   b) Elderly (aged 65 and over)
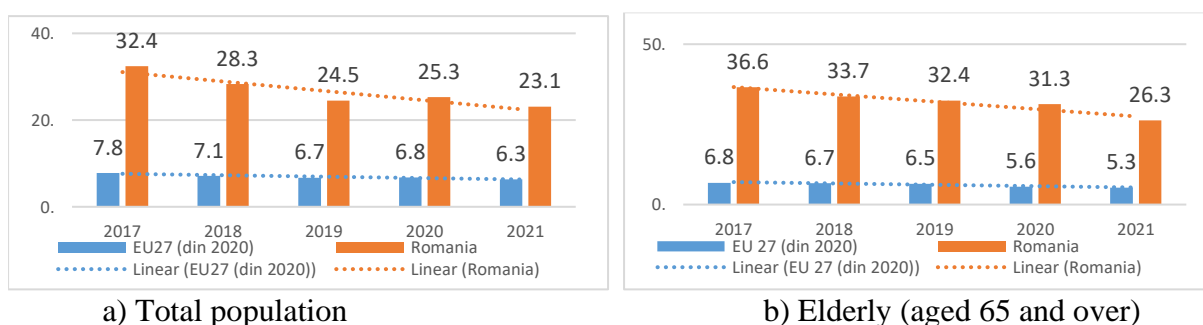
Figure 4: Severe material and social deprivation, Romania and EU average, 2017-2021 (%)
(Source: Eurostat [ILC_MDSD11], last update 10/05/2023)

Instead, at national level this risk is particularly pronounced, reaching 26.3% in 2021, well even above the national average (23.1%) and approx. 5 times higher than the EU average (5.3%), which means particularly large gap as well as significant national incidents among the elderly. Otherwise, many elderly people (almost 1.15 million in 2020 and 970 thousand in 2021) are found in severe material and social deprivation, meaning that they do not have the capacity to afford certain goods or services which most people consider to be desirable or even necessary to lead a proper life. Even if during the last 5 years the incidence has decreased quite a bit, by approx. 10 percentage points, from 36.6. However, a rate of over 26% remains at a particularly high threshold, which greatly affects the level and quality of life of the elderly in our country.

4. CONCLUSION

Even if such dynamic analyses do not involve innovation, they are important to monitoring the current level of some indicators regarding the picture of poverty and associated phenomena among elderly people. These analyses are also important to identify the gaps with respect to certain targets fixed by national and European strategies. These evaluation and monitoring benchmarks will guide the steps that still need to be taken to reach these goals. In this regard, the analysis of statistical indicators highlights the following picture of social risks associated with poverty, both in terms of the total population and people aged 65 and over, nationally and compared to the Union average and some European countries of the EU panel:

- poverty or social exclusion: Romania presents the highest risk of poverty or social exclusion in the total population (close to Bulgaria), with high incidences of over 31-34% in the last 5 years, well above the Union average (22%), with a declining trend in recent years. Instead, a much more pronounced risk is recorded among EU people aged 65 years and over in countries such as Bulgaria and Latvia (over 45%), Estonia (42%), Lithuania and Romania (39%) and Croatia (33%), where the incidents are well above the EU average (approx. 20%). Romania, even has the highest risks of poverty or social exclusion in the total population, in terms of the elderly aged 65 and over, maintains a rather favorable position, in the sense that the incidence of poverty or social exclusion among the elderly exceeds by 3-8.5 percentage points the national risk in the total population; but, nevertheless, both incidences of poverty or social exclusion remain at high levels, when over 1 in 3 Romanians or almost 1 in 2.5 elderly Romanians face this risk. This is a target indicator in the European Pillar of Social Rights Action Plan aiming an ambitious goal of a 50% reduction in the number of people at risk of poverty by 2030 (the number of people facing this risk should be reduced by at least 15 million compared to 2019).

- income relative poverty: The poorest states of the Union are throughout Romania with Bulgaria and Latvia, which exceed the EU average by approx. 6 percentage points in the total population. These countries maintain the status of the poorest countries, having a high incidence among the total population (22-23%) and placing on a trend with some decline in recent years. In respect of persons aged 65 years and over, there is a rather strong poverty, but the gaps between countries are particularly significant, with incidences up to 2.7 times higher than the EU average over the last 5 years (approx. 17% in 2021). Countries with the highest poverty rates among the elderly are: Latvia (approx. 45%), Estonia (approx. 41%), Lithuania (36%), Bulgaria (approx. 35%), Croatia (slightly over 32%), Malta (28%) and Romania (approx. 22%). Romania, even if it is placed among the countries with the highest risks of poverty in the total population, in terms of the elderly aged 65 and over, maintains a better position, in the sense that the poverty incidence among the elderly is within limits close to the national average in the total population. Both poverty incidences remain at high values, when over 1 in 5 Romanians or 5 elderly Romanians face this risk. This is an important component of the target indicator in the European Strategy / European Pillar of Social Rights Action Plan to reduce poverty.

- poverty persistence: Over the last decade, among the total population in Europe, this rate has fluctuated around the 11% threshold, while national values showed a much higher incidence, sometimes close to double, which remained between 17-20%, with lower and decreasing values, in recent years. In contrast, among the elderly population aged 65 and over, if at EU level, the persistent risk of poverty of the elderly was similar with the entire population (11-11.5%), nationally, the persistence of poverty of the elderly presents a continuous upward trend, with a significant rhythm starting with 2012, when the incidence (8%) was below the EU average by approx. 2 percentage points and reaching a high value

more than double in 2021 (19%). These increased incidences show that many elderly people find in persistent poverty, for long time, which increases the likelihood of remaining in poverty even longer, generating even more poverty and inability to overcome it. That means increasing precariousness and vulnerabilities among elderly, but also deteriorating their standard of living and life expectancy. Thus, an alarm signal is drawn, in the sense that the elderly in Romania not only face monetary poverty and poverty or social exclusion, but the persistence of poverty is accelerated, with a growing magnitude, which leads us to think that poverty could become chronic and acute among vulnerable elderly people, with little chance of regaining their economic and social stability. This means that the elderly need a quickly and effective support to reduce these risks.

- severe material and social deprivation: At EU level, the dynamics of the indicator show a decreasing trend that oscillated in the value range of 6-8% in the total population, while in Romania, this risk had incidences of approx. 4 times higher, in decline in the last years. But with values that reach the 23% threshold, such a national risk greatly affects the population and shows a significant gap with the European average. A severe and growing material and social deprivation affects the elderly aged 65 and over in Romania, which faces not only an impressive gap with the EU average (5-7%), with incidences of approx. 5 times higher (26-37%), but the values are higher than the national thresholds registered at the level of the entire population, by 3-4 percentage points, compared to only 1 percentage point differences at EU level. Even if it shows a decreasing trend over time, however this risk remains particularly high in Romania, so that more than 1 in 4 elderly people face this severe risk in 2021. Severe material and social deprivation is a targeted indicator of the National Strategy on Social Inclusion and Poverty Reduction for the period 2022-2027, aimed to reduce the number of these persons at least 20% in 2021 compared to the reference value for 2020.

Thus, the analysis of the social indicators presents a rather eloquent picture regarding the living standards of the elderly vs. the total population at national and international levels. At the same time, these analyses highlight in dynamics the existing gaps from the average and from the strategic targets assumed at different times (2020 - the strategy that ended, or 2027 / 2030 – the current strategic cycle), with various alarms where poverty, or poverty or social exclusion, severe material and social deprivation, or the persistence of poverty go deep, have high values and maintain significant incidents over time. These assessments and monitoring were carried out to highlight not only large magnitudes or significant vulnerabilities, but the need to act promptly and targeted to reduce these social risks that remain at high thresholds and affect the entire population, but especially the elderly. All these social risks, which are often complementary, intertwine and amplify, require continuous support, which leads to the identification of new ways to adapt them to the new opportunities, respectively to the implementation of new, more targeted and integrated actions to support resilience, with a more effective response to the growing needs of the vulnerable people, especially among the elderly.

LITERATURE:

1. Alkire, S., & Foster, J. (2011). *Counting and multidimensional poverty measurement.* Journal of Public Economics, 95, 476–487. Retrieved from https://doi.org/10.1016/ j.jpubeco.2010.11.006.
2. Alkire, S. and Santos, M.E. (2010). *Acute Multidimensional Poverty: A New Index for Developing Countries.* OPHI Working Papers 38, University of Oxford. Retrieved from https://ophi.org.uk/wp-38/.
3. Alkire, S., & Seth, S. (2015). *Multidimensional poverty reduction in India between 1999 and 2006: Where and how?.* World Development, 72, 93–108. Retrieved from https://www.ophi.org.uk/wp-content/uploads/Multidimensional-Poverty-Reduction-in-India-1999-2006.pdf.
4. Dinu, Elena Lidia. (2022). *Dinamica sărăciei în rândul populaţiei vârstnice din România / Dynamic of poverty among elderly people in Romania.* Retrieved from https://cnpv.ro/wp-content/uploads/2022/07/Dinamica-saraciei-pers.-varstnice-in-Romania.pdf.
5. European Economic and Social Committee. (2021). *The ambitious goal of reducing povery by 50% can be achieved by 2030.* Retrieved from https://www.eesc.europa.eu/en/news-media/news/ambitious-goal-reducing-poverty-50-can-be-achieved-2030.
6. European Commission. (2022). *The European Pillar of Social Rights Action Plan by 2030.* Retrieved from https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3782.
7. Eurostat data, Database and Metadate, Section Population and social conditions. Subsection Living conditions and welfare, Income and living conditions. Retrieved from https://ec.europa.eu/eurostat/web/main/data/database.
8. Iparraquirre, José Luis. (2020). *Poverty, Deprivation, and Social Class.* Economics and Ageing, 175-254. Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-29013-9_5.
9. Ghenţa, M, Bobârnat, E.S. (2021). *Determinanţi ai excluziunii sociale în rândul persoanelor Vârstnice / Social exclusion determinants amond elderly.* Sociologie Românească vol. 19 (1), 87. Retrieved from https://www.ceeol.com/search/article-detail?id=1016537.
10. Ghenţa, M, Matei, A, Mladen-Macovei, L. (2019). *Perceptions concerning poverty and social protection: a comparative approach.* Romanian Journal for Multidimensional Education / Revista Românească pentru Educaţie Multidimensională. 2019, Vol. 11, Issue 4, 30-39. Retrieved from https://ideas.repec.org/a/lum/rev1rl/v11y2019i4p30-39.html.
11. Lincaru, Cristina. (2008). *Piaţa muncii în România / Labour market in Romania.* Editura AGIR / AGIR Publisher, Romania.
12. Małgorzata, Ćwiek, Katarzyna Maj-Waśniowska, Katarzyna Stabryła-Chudzio. (2021). *Assessment of Poverty by Municipalities in the Context of Population Ageing - The Case of Małopolskie Voivodeship.* Sustainability 13:5, pages 2563. Retrieved from https://www.mdpi.com/2071-1050/13/5/2563.
13. Muis, Ichwan, Andi, Agustang, Adam, Arlin. (2020). *Elderly poverty: social demographic, work distribution, problem health & social protection.* Asian Journal of Social Sciences & Humanities (AJSSH), 9 (1), 40-48. Retrieved from http://eprints.unm.ac.id/23111/.
14. National Institute of Statistics. (2018). *Projecting the Romanian elderly population, at the territorial level, at the horizon of 2060.* Retrieved from https://insse.ro/cms/sites/default/files/field/publicatii/proiectarea_populatiei_varstnice_in_profil_teritorial_la_orizontul_anului_2060_0.pdf.
15. Panda, Basant Kumar, Mohanty, Sanjay K. (2023). *Multidimensional poverty among the elderly in India.* Handbook of Aging, Health and Public Policy, Springer, 1-16. Retrieved from https://link.springer.com/referenceworkentry/10.1007/978-981-16-1914-4_107-1.

16. Peng, C., Fang, L., Wang, J.SH. et al. (2019). *Determinants of Poverty and Their Variation Across the Poverty Spectrum: Evidence from Hong Kong, a High-Income Society with a High Poverty Level*. Social Indicators Research, 144, 219–250. Retrieved from https://doi.org/10.1007/s11205-018-2038-5.

17. Rahayu, H. C., Purwantoro, Wibowo, M., Safitri, J., Suparjito. (2022). *Determinants of welfare for the elderly population in Indonesia*. KnE Medicine 2, 782–793 / The International Conference of Medicine and Health (ICMEDH), 2022. Retrieved from https://knepublishing.com/index.php/KnE-Medicine/article/view/11934.

18. Sari Rissanen & Satu Ylinen. (2014). *Elderly poverty: risks and experiences – a literature review*. Nordic Social Work Research, Volume 4, 2014, 144-157. Retrieved from https://www.tandfonline.com/doi/full/10.1080/2156857X.2014.889031?scroll=top&need Access=true&role=tab&aria-labelledby=full-article.

19. Simion, Larisa. (2022). *Excluziunea socială a persoanelor vârstnice/Social exclusion of the elderly*. From https://cnpv.ro/wp-content/uploads/2022/05/Excluziunea_sociala_a_persoan elor_varstnice.pdf.

20. Zhou, Sarah. (2020). *Evaluating the impact of labor market and pension policies on the rise of elderly female poverty in Japan*. Social Impact Research Experience (SIRE), 78. Retrieved from https://repository.upenn.edu/sire/78.

THE IMPORTANCE OF CIRCULAR ECONOMY FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT
Given the intensive population growth and increased usage of natural resources with severe environmental consequences, economies are searching for ways to increase resource efficiency and reduce waste, thus enabling a transition from the linear to the circular economy model. A circular economy has been viewed by researchers as a multidimensional concept that has significant benefits to the economy and society as a whole. It represents an economic model that emphasizes the importance of reducing waste, keeping resources in use for as long as possible, and recovering and regenerating materials at the end of their useful life. A circular economy is a key concept for sustainable development, as it promotes the efficient use of natural resources and the reduction of waste, pollution, and greenhouse gas emissions. Therefore, the aim of this paper is to explore the importance of a circular economy for sustainable development. The data employed in the study are from the European Union Monitoring Framework database. The obtained results point to the fact that the circular economy is a core concept for sustainable development as it promotes resource efficiency, reduces waste, fosters economic growth, promotes social development, and combats climate change. Adopting circular economy principles is essential for building a sustainable future for current and future generations.
Keywords: *circular economy, sustainable development, waste reduction, resource efficiency, performance indicators*

1. INTRODUCTION
In the contemporary context, the concepts of circular economy and sustainability have gained significant attention, as societies seek to address pressing environmental challenges and build a more resilient and equitable future. The traditional linear model of "take-make-dispose" is proving to be unsustainable, depleting finite resources, generating excessive waste, and contributing to environmental degradation (Marković et al., 2020). As a result, there is a growing recognition that a fundamental shift in our economic and production systems is necessary to achieve long-term sustainability. The circular economy offers an alternative approach that aims to decouple economic growth from resource consumption by promoting the efficient use of materials, minimizing waste generation, and maximizing the value of resources throughout their lifecycle, thus contributing to sustainable development. Namely, circular economy aligns with the economic, social and environmental dimensions of sustainable development by offering a framework that promotes resource efficiency, minimizes waste generation, and reduces environmental impacts, while also fostering economic growth and social well-being. In a circular economy, products are designed to be durable, repairable, and easily disassembled for recycling or reuse (Popović et al., 2022). One of the key aspects of the circular economy is the concept of the "closed-loop system", where resources are kept in circulation for as long as possible (Kara et al., 2022). The circular economy and sustainable development share a common goal of achieving long-term environmental, social, and economic

well-being, and both concepts complement and reinforce each other in pursuing a more sustainable future (Vranjanac et al., 2023). Economically, the circular economy can drive innovation, job creation, and new business opportunities. It encourages the development of sustainable and resilient supply chains, promotes the adoption of renewable energy sources, and fosters the emergence of circular business models, such as product-as-a-service and sharing platforms. These initiatives not only contribute to economic growth but also enhance resource efficiency, reduce production costs, and improve competitiveness. Socially, the circular economy offers numerous benefits. It emphasizes the importance of social equity, fair labour practices, and inclusive growth. By promoting product durability, repairability, and remanufacturing, it creates opportunities for local repair and maintenance services, extending the lifespan of products and reducing the need for constant replacements. Moreover, the circular economy encourages collaboration and knowledge-sharing among stakeholders, fostering a sense of community engagement and participation. Environmentally, the circular economy addresses the urgent need to reduce resource extraction, minimize waste generation, and mitigate pollution. By adopting practices such as recycling, reusing, and repurposing, it reduces the demand for non-renewable resources, lowers energy consumption, and decreases greenhouse gas emissions. The circular economy also encourages the use of renewable energy sources and the restoration of ecosystems, contributing to biodiversity conservation and the preservation of natural capital. The link between the circular economy and sustainable development is crucial for achieving global sustainability goals. The United Nations Sustainable Development Goals (SDGs) explicitly recognize the importance of the circular economy in multiple areas, including responsible consumption and production, climate action, affordable and clean energy, sustainable cities and communities, and life on land and below water. Governments, businesses, and civil society are increasingly embracing the circular economy as a means to advance sustainable development. Policies and regulations are being implemented to support circular initiatives, financial mechanisms are being developed to fund circular projects, and collaborations are being forged to promote knowledge exchange and capacity-building. Bearing all this in mind, the aim of this paper is to investigate the importance of a circular economy for sustainable development in EU countries and provide recommendations to policymakers to effectively support companies in the implementation of circular economy principles. In that regard, several hypotheses will be assessed to determine the significant impact of the circular economy on sustainable development in EU countries. To fulfil the set objective, the paper is divided into several sections. After the introduction, the theoretical background and literature review are presented, followed by the data and methodology section, and the results and discussion section. Finally, in the conclusion some policy recommendations are provided.

2. THEORETICAL BACKGROUND AND LITERATURE REVIEW
The circular economy is an alternative economic model that aims to redefine and redesign the traditional linear "take-make-dispose" approach to production and consumption. It focuses on creating a closed-loop system in which resources are used more efficiently, waste and pollution are minimized, and products and materials are kept in use for as long as possible. There are several reasons why the circular economy is important for sustainable development: resource efficiency, waste reduction, economic opportunities, climate change mitigation, resilience and security (Ellen MacArthur Foundation, 2013; EEA, 2016). The circular economy promotes the efficient use of resources by maximizing their value throughout their lifecycle. It encourages practices such as recycling, reuse, remanufacturing, and repair, which help to reduce the need for extracting and processing new raw materials. By doing so, it reduces resource depletion and environmental degradation. Additionally, in a circular economy, waste is minimized by designing products and processes that generate fewer waste materials. It emphasizes the

importance of recycling and reusing materials to create a closed-loop system where waste becomes a valuable resource. This reduces the reliance on landfills and incineration, which can have negative environmental and health impacts. Further, the circular economy presents economic opportunities by promoting innovation, job creation, and new business models. It encourages the development of eco-friendly technologies, the growth of recycling and repair industries, and the emergence of collaborative consumption platforms. These activities can contribute to economic growth while reducing environmental impacts. Also, the circular economy can play a significant role in mitigating climate change. By reducing the extraction of raw materials and the energy-intensive processes associated with their production, it helps to lower greenhouse gas emissions. Additionally, by focusing on energy efficiency and renewable energy sources, the circular economy can further contribute to the reduction of carbon footprints. Finally, the circular economy enhances resilience and security in resource supply chains. By diversifying sources of materials, relying on recycled or secondary resources, and reducing dependence on imports, countries can become less vulnerable to price volatility and supply disruptions. This strengthens their economic stability and security. Overall, the circular economy aligns with the principles of sustainable development by promoting environmental stewardship, social well-being, and economic prosperity. It offers a holistic approach to resource management and consumption patterns, aiming to create a regenerative and sustainable future. According to McKinsey research (2017), a circular economy could boost Europe's resource productivity by 3% by 2030, resulting in annual cost savings of €600 billion and additional economic gains of €1.8 trillion. The literature investigating the impact of the circular economy on economic growth is vast, and it is still growing. A study by Busu (2019) for the 27 EU countries covering the period 2008-2017 confirmed the positive and statistically significant impact of circular economy indicators on economic growth. According to the findings of this study, the most important determinant of economic growth among circular economy indicators is resource productivity, followed by the labour employed in the production of environmental goods. These results are in line with the study conducted by Trica et al. (2019) for the 27 EU countries covering the period 2007-2016. Namely, this study also revealed that resource productivity and environmental employment are the most influential determinants of economic growth. Another study by Busu and Trica (2019) analysed the economic growth between EU member states between 2010 and 2017. The results revealed the positive impact of the circular material use rate, the recycling rate of municipal waste, the trade in recycling materials, real labour productivity, environmental taxes, and resource productivity on economic growth. The research by Chen and Pao (2022) used panel data from the 25 EU countries from 2010 to 2018 to explore the causality between circular economy and economic growth. The results revealed that the two indicators of waste recycling rate and circular economy-related investment had a positive effect on GDP, while the material recycling indicator had a negative effect. A study by Hysa et al. (2020) used the models with five independent variables for the circular economy – environmental tax rate, a recycling rate of waste, private investment and jobs in a circular economy, patents related to recycling, and trade of recyclable raw materials. The results of both investigated econometric models showed a strong and positive correlation between a circular economy and economic growth, highlighting the crucial role of sustainability, innovation, and investment in no-waste initiatives to promote growth. In summary, the literature suggests a positive relationship between circular economy indicators and economic growth in EU countries. The transition to a circular economy, characterized by improved resource efficiency, waste management, eco-innovation, and job creation, is associated with higher GDP growth rates, increased labour productivity, and enhanced economic performance. As regards the impact of the circular economy on greenhouse gas emissions, the literature suggests that circular economy indicators have the potential to impact greenhouse gas emissions in EU countries positively, since circular economy practices, such as

improved waste management, increased recycling rates, and enhanced resource efficiency, can contribute to reductions in carbon emissions (Knäble et al., 2022). However, further research is needed to provide more comprehensive assessments of specific circular economy indicators and their impact on sustainable development in different EU countries.

3. DATA AND METHODOLOGY

This study employs the circular economy indicators from the EU monitoring framework on circular economy. This framework consists of 5 thematic areas: 1) production and consumption, 2) waste management, 3) secondary raw materials, 4) competitiveness and innovation, and 5) global sustainability and resilience (Eurostat, 2023). A framework has been established by the European Commission for measuring progress toward a circular economy. It offers a comprehensive perspective on circular economy development since it:

- evaluates the advantages of "going circular" both directly and indirectly,
- appreciates the role that a circular economy can play in helping people live sustainably on the Earth,
- takes into account the availability of the resources.

For the analysis in this study, indicators are chosen based on the comprehensive analysis of variables used in previous studies by covering the key components of the circular economy and key dimensions of sustainable development (Table 1).

Variable	Type	Unit of measure
Resource Productivity (RP)	Predictor	PPS per kg
Generation of municipal waste per capita (MWpc)	Predictor	kg per capita
Recycling rate of municipal waste (RRMW)	Predictor	%
Circular material use rate (CMUR)	Predictor	%
GDP per capita (GDPpc)	Dependent	PPP constant 2017 international $
GHG emissions per capita (GHGpc)	Dependent	t of CO2 equivalent per capita
Unemployment rate	Dependent	%

Table 1: List of used variables
(Source: Authors)

Numerous studies have examined Resource Productivity as a crucial indicator of a circular economy (Tantau et al., 2018; Vuţă et al., 2018; Trica et al., 2019; Busu, 2019; Busu & Trica, 2019; Robaina et al. 2020; Mongo et al., 2022; Vranjanac et al., 2023). This indicator is a good measure of progress towards a circular economy, since more circular economies utilize fewer natural resources and exert less pressure on the environment (Robaina et al., 2020). According to the Eurostat (2023), Resource Productivity is calculated by dividing GDP by the domestic material consumption (DMC), whereas the DMC represents the measure of the total amount of materials directly used by an economy. Resource Productivity is measured by the purchasing power standard (PPS) per kilogram. This indicator eventually demonstrates how effectively a country uses local resources to create a sustainable economy (Trica et al., 2019). Another indicator used in this study, as well as in numerous previous studies (Magazzino et al., 2020; Mazur-Wierzbicka, 2021; Georgescu et al., 2022; Chen & Pao, 2022; Vranjanac et al., 2023), is the generation of municipal waste per capita (MWpc). The indicator measures the waste collected at the municipality level and disposed of through the waste management system

(Eurostat, 2023), and generally, it can approximate potential global environmental pressure in the country (Magazzino et al., 2020). Reducing the generation of municipal waste indicates waste prevention effectiveness and changing patterns of citizens' consumption (Bianchi & Cordella, 2023). The Recycling rate of municipal waste (RRMW) is another important indicator of the circular economy. This indicator measures the portion of total municipal waste generation which is recycled (Eurostat, 2023). Recycling is considered a crucial variable for attaining reduced natural resource consumption, high resource productivity, and therefore a more circular economy (Robaina et al., 2020). This indicator is a main indicator of recycling efficiency and has been used in numerous previous studies (Tantau et al., 2018; Busu & Trica, 2019; Hysa et al., 2020; Robaina et al., 2020; Mazur-Wierzbicka, 2021; Knäble et al., 2022; Mongo et al., 2022; Georgescu et al., 2022; Chen & Pao, 2022; Vranjanac et al., 2023). Circular material use rate (CMUR) has also been used as an important indicator of circular economy in several studies (Tantau et al., 2018; Moraga et al., 2019; Mazur-Wierzbicka, 2021; Knäble et al., 2022; Bianchi & Cordella, 2023), which measure the circularity rate of economies. This indicator measures the share of material recycled and fed back into the economy - thus saving extraction of primary raw materials - in overall material use (Eurostat, 2023). A higher circularity rate indicates that more primary raw materials are replaced by secondary materials, thus reducing the negative environmental impacts associated with resource extraction (Bianchi & Cordella, 2023). As regards the dependent variables the study builds upon the research conducted by Knäble et al. (2022). It employs the real Gross Domestic Product per capita in constant 2017 PPP $ (GDPpc) as the proxy indicator of economic growth, i.e., the economic component of sustainable development, Greenhouse gas emissions per capita (GHGpc) as an indicator for the environmental component of sustainable development, and the Unemployment rate (UNE) as an indicator of the social component of the sustainable development. All these data are obtained from the World Bank Development Indicators database. In order to analyse the impact of circular economy indicators on sustainable development, the following hypotheses are investigated:

- H1: Resource Productivity, Generation of municipal waste per capita, Recycling rate of municipal waste, Circular material use rate, and GDP per capita are positively correlated;
- H2: Resource Productivity, Generation of municipal waste per capita, Recycling rate of municipal waste, Circular material use rate, and GHG emissions per capita are negatively correlated;
- H3: Resource Productivity, Generation of municipal waste per capita, Recycling rate of municipal waste, Circular material use rate, and Unemployment rate are negatively correlated;
- H4: Increase in Resource Productivity, Generation of municipal waste per capita, Recycling rate of municipal waste, and Circular material use rate lead to the increase in GDP per capita;
- H5: Increase in Resource Productivity, Generation of municipal waste per capita, Recycling rate of municipal waste, and Circular material use rate lead to a decrease in GHG emissions per capita;
- H6: Increase in Resource Productivity, Generation of municipal waste per capita, Recycling rate of municipal waste, and Circular material use rate lead to a decrease in Unemployment rate.

The sample consists of 27 EU countries covering the period from 2008 to 2020, hence the panel data models will be analysed. The data are tested for normality by employing the Shapiro-Wilk and Shapiro-Francia normality tests. The Spearman correlation coefficient is calculated to determine the relationship among variables. This coefficient takes values from -1 to +1, and values close to ±1 indicate a strong relationship among variables.

According to Cohen et al. (2003), a weak correlation exists if the correlation coefficient is in the range of 0-0.39, moderate in the range of 0.40-0.59, and strong in the range of 0.60-1. Due to the panel data, F-test, the Breusch-Pagan LM test and the Hausman test are performed to choose the appropriate regression model. The acceptance of the null hypothesis in the F-test points to the appropriateness of the Pooled Regression Model (Pooled), while rejection of the null hypothesis indicates the appropriateness of the Fixed Effects Model (FEM). The acceptance of the null hypothesis in the Breusch-Pagan LM test points to the appropriateness of the Pooled model, while rejection of the null hypothesis indicates the appropriateness of the Random Effects model (REM). Finally, the acceptance of the null hypothesis in the Hausman test reveals the appropriateness of the REM (Gujarati, 2004).

4. RESULTS AND DISCUSSION

Descriptive statistics are presented in Table 2. The average RP in the analysed countries is 1.76 PPS per kg. The minimum value of 0.54 PPS per kilogram was recorded in Bulgaria in 2008, while the maximum value of 4.62 PPS per kg was recorded in the Netherlands in 2020. The average MWpc in the analysed countries is 493.45 kg per capita, while the minimum value of 247 kg per capita was recorded in Romania in 2015, and the maximum value of 862 kg per capita was recorded in Denmark in 2011. The average value of RRMW in the analysed countries is 33.29%, while a minimum value of 0.9% was recorded in Romania in 2008, and a maximum value of 70.3% is recorded in Germany in 2020. The average value of CMUR in the analysed countries is 8.63%, while the minimum value of 1.2% was recorded in Latvia in 2010, and a maximum value of 30% is recorded in the Netherlands in 2019-2020. The average value of GDP per capita in analysed countries is 40,992.04 \$ (2017 PPP), and the minimum value of GDP per capita has Bulgaria in 2009 (17,767.54), while the maximum value of GDP per capita has Luxembourg in 2008 (118,154.7). The average value of GHG emissions per capita in analysed countries is 8.89 t of CO_2 equivalent per capita, and the minimum value of GHG emissions per capita has Malta in 2016 (4.14), while the maximum value of GHG emissions per capita has Luxembourg in 2008 (24.62). The average unemployment rate in the analysed countries is 8.8%, and the minimum unemployment rate has Czechia in 2019 (2.01), while the maximum unemployment rate has Greece in 2013 (27.47).

Variable	Mean	Standard Deviation	Minimum	Maximum
rp	1.76114	0.7930919	0.54	4.62
mwpc	493.4553	131.0571	247	862
rrmw	33.28905	16.39289	0.9	70.3
cmur	8.627609	6.355433	1.2	30
gdppc	40,992.04	18,570.08	17,767.54	118,154.7
ghgpc	8.890216	3.43085	4.14	24.62
une	8.79792	4.559428	2.01	27.47

Table 2: Descriptive statistics
(Source: Authors' calculations)

The results of the Shapiro-Wilk and Shapiro-Francia normality tests are presented in Table 3, and they revealed the non-normality of the data ($p<0.05$). Hence, the non-parametric Spearman's correlation analysis has been performed and the results are presented in Table 4.

Variable	Shapiro-Wilk		Shapiro-Francia	
	W	p-value	W'	p-value
rp	0.93262	0.00000	0.93351	0.00001
mwpc	0.97237	0.00000	0.97411	0.00002
rrmw	0.97426	0.00001	0.97669	0.00005
cmur	0.88503	0.00000	0.88618	0.00001
gdppc	0.76869	0.00000	0.76847	0.00001
ghgpc	0.86031	0.00000	0.85964	0.00001
une	0.86039	0.00000	0.86035	0.00001

Table 3: Normality tests
(Source: Authors' calculations)

The correlation between GDP per capita and circular economy indicators is positive and statistically significant ($p<0.01$). The relationship between Resource Productivity, Municipal waste generation per capita, Recycling rate of municipal waste, and GDP per capita is strong, while between Circular material use rate and GDP per capita is moderate. The strongest connection is between the Recycling rate of municipal waste and GDP per capita (0.7445). These results confirm hypothesis H1. Further, the correlation between GHG emissions per capita and circular economy indicators is also positive and statistically significant ($p<0.05$). The relationship between Resource Productivity, Municipal waste generation per capita, Recycling rate of municipal waste, and GHG emissions per capita is weak, while between Circular material use rate and GHG emissions per capita is moderate (0.4181). These results are partly in line with those obtained in the study by Knäble et al. (2022), who also find a positive correlation between GHG emissions per capita and recycling rates (RRMW and CMUR), but lead to the rejection of hypothesis H2.

Variable	RP	MWpc	RRMW	CMUR	GDPpc	GHGpc	UNE
RP	1.0000						
MWpc	0.4928*	1.0000					
RRMW	0.4857*	0.4017*	1.0000				
CMUR	0.5347*	0.1545**	0.6146*	1.0000			
GDPpc	0.6078*	0.7168*	0.7445*	0.5216*	1.0000		
ghgpc	0.1218**	0.2677*	0.3893*	0.4181*	0.4718*	1.0000	
UNE	-0.1394**	-0.2195*	-0.4307*	-0.3205*	-0.4496*	-0.2628*	1.0000
Note: *, ** Correlation is significant at the 0.01 and 0.05 levels respectively							

Table 4: Correlation analysis
(Source: Authors' calculations)

Finally, the correlation between the Unemployment rate and circular economy indicators is negative and statistically significant ($p<0.05$). The relationship between Resource Productivity, Municipal waste generation per capita, Circular material use rate, and the Unemployment rate is weak, while between Recycling rate of municipal waste and the Unemployment rate is moderate (-0.4307). These results are also in line with the results of Knäble et al. (2022), and confirm hypothesis H3. Table 5 shows the test results for choosing the appropriate regression model. Based on the obtained results it is determined that FEM is appropriate for fitting analysed data.

Model	*F-test*	*Breusch-Pagan LM*	*Hausman*
	H0: Pooled, H1: FEM	*H0: Pooled, H1: REM*	*H0: REM, H1: FEM*
Model 1	100.25 (0.0000)	979.33 (0.0000)	68.22 (0.0000)
Model 2	134.63 (0.0000)	842.12 (0.0000)	12.30 (0.0153)
Model 3	28.34 (0.0000)	558.80 (0.0000)	229.98 (0.0000)
Note: p values in ( )			

Table 5: Test results for choosing the appropriate model
(Source: Authors' calculations)

In order to investigate the impact of circular economy indicators on sustainable development three FEM regressions were performed. After performing these FEM models, the Pesaran cross-sectional dependence test and Wooldridge test for serial correlation were conducted. The results of these tests are presented in Table 6. The results of the Pesaran CD tests for all three models have revealed the presence of cross-sectional dependence, whereas the results of Wooldridge tests revealed that data have first-order autocorrelation. Hence, the regression analysis results for the FEM model with Driscoll and Kraay standard errors with lag(3), which solves cross-sectional dependence and autocorrelation, are presented in Table 7.

Model	*Pesaran cross-sectional dependence (CD) test*	*Wooldridge test*
	H0: no cross-sectional dependence *H1: cross-sectional dependence*	*H0: no serial correlation* *H1: serial correlation*
Model 1	12.428 (0.0000)	772.736 (0.0000)
Model 2	12.982 (0.0000)	90.606 (0.0000)
Model 3	15.439 (0.0000)	429.324 (0.0000)
Note: p values in ( )		

Table 6: Test results for cross-sectionally dependence and serial correlation
(Source: Authors' calculations)

Model 1 investigates the impact of circular economy indicators on the economic component of sustainable development – GDPpc. The estimated model explains a 35.08% change in GDP per capita and this model is statistically significant as confirmed by the F test (p=0.0000). According to the obtained results, Resource Productivity is not statistically significant in explaining the GDP per capita changes, although its impact is positive as expected. These results are in line with those of Vuţă et al. (2018), who found a positive but statistically insignificant impact of resource productivity on economic growth, whereas Trica et al. (2019) revealed a positive and statistically significant impact. Additionally, the Circular material use rate is statistically insignificant in explaining changes in GDPpc, but this impact is negative. Hence, hypothesis H4 is only partially confirmed. The other two analysed variables are statistically significant in explaining changes in GDP per capita. If the Generation of municipal waste per capita increases by 1%, the GDP per capita will increase by 0.2%, holding all other variables constant. Furthermore, if the Recycling rate of municipal waste increases by 1%, the GDP per capita will increase by 0.12%, ceteris paribus. These results correspond to those obtained by Chen and Pao (2022), who also found a positive and statistically significant impact

of the Generation of municipal waste per capita and the Recycling rate of municipal waste on real GDP. Additionally, similar results are obtained by Georgescu et al. (2022), who also found a positive impact of the Generation of municipal waste per capita and the Recycling rate of municipal waste on the GDP per capita, but only the impact of the Recycling rate of municipal waste is statistically significant.

Independent Variables	Model 1 Dependent: ln GDPpc	Model 2 Dependent: ln GHGpc	Model 3 Dependent: ln Une
Constant	8.861024 [26.84] (0.000)	3.097285 [8.05] (0.000)	10.30109 [6.86] (0.000)
ln RP	0.1280865 [1.64] (0.132)	-0.3468309 [-5.03] (0.001)	-0.2574408 [-0.77] (0.458)
ln MWpc	0.2004699 [3.49] (0.006)	-0.148768 [-2.30] (0.047)	-1.077054 [-3.95] (0.003)
ln RRMW	0.1202632 [10.95] (0.000)	0.0092483 [0.28] (0.788)	-0.3768958 [-5.79] (0.000)
ln CMUR	-0.0109531 [-1.08] (0.303)	0.0304706 [1.58] (0.148)	-0.0940547 [-6.88] (0.000)
R2	0.3508	0.2080	0.4102
F statistics	171.49 (0.0000)	114.99 (0.0000)	43.70 (0.0000)
Note: t values are given in [ ], p values are given in ( )			

Table 7: Regression analysis results
(Source: Authors' calculations)

Model 2 investigates the impact of circular economy indicators on the environmental component of sustainable development – GHGpc. The estimated model explains a 20.80% change in GHG emissions per capita and this model is statistically significant as confirmed by the F test (p=0.0000). According to the obtained results, the Recycling rate of municipal waste and the Circular material use rate are both statistically insignificant in explaining the GHG emissions per capita changes, whereas their impact is positive, contrary to what is expected. These results are partly in line with those of Knäble et al. (2022), who found a negative and statistically insignificant impact of recycling factor (Recycling rate of municipal waste, Circular material use rate, and Trade in recyclable raw materials) on GHGpc. The other two analysed variables are statistically significant in explaining changes in GHG emissions per capita. If the Generation of municipal waste per capita increases by 1%, the GHG emissions per capita will decrease by 0.15%, holding all other variables constant. Furthermore, if the Resource Productivity increases by 1%, the GHG emissions per capita will decrease by 0.35%, ceteris paribus. Hence, hypothesis H5 is only partially confirmed. Model 3 investigates the impact of circular economy indicators on the social dimension of sustainable development – Unemployment. The estimated model explains a 41.02% change in Unemployment and this model is statistically significant as confirmed by the F test (p=0.0000).

According to the obtained results, Resource Productivity is not statistically significant in explaining the Unemployment changes, and its impact is negative as expected. The other three analysed variables are statistically significant in explaining changes in Unemployment. If the Generation of municipal waste per capita increases by 1%, Unemployment will decrease by 1.08%, holding all other variables constant. Furthermore, if the Recycling rate of municipal waste increases by 1%, Unemployment will decrease by 0.38%, ceteris paribus. Finally, if the Circular material use rate increases by 1%, Unemployment will decrease by 0.09%, ceteris paribus. Hence, hypothesis H6 is only partially confirmed. These results correspond to those obtained by Knäble et al. (2022), who also found a negative and statistically significant impact of recycling factor on the GHGpc.

5. CONCLUSION

The concept of the circular economy has grown in popularity in recent years, driven by the growing recognition of the finite nature of our planet's resources and the need for sustainable economic growth. The EU, in particular, has been at the forefront of pushing for a transition to a circular economy, with the aim of enhancing economic growth and improving environmental sustainability. Circular economy indicators such as Resource Productivity, Generation of municipal waste per capita, Recycling rate of municipal waste, and Circular material use rate, among others, are being utilized to measure the transition towards circularity. However, the relationship between these circular economy indicators and sustainable development remains an area of considerable debate. This paper aimed at investigating the importance of a circular economy for sustainable development in the sample of 27 EU countries covering the period 2008-2020. Some of the defined hypotheses were only partially confirmed, as not all circular economy indicators had a significant impact on sustainable development. The results revealed that an increase in Resource Productivity led to a decrease in GHGpc, while the impact on the other indicators of sustainable development was statistically insignificant. The increase in the Generation of municipal waste per capita led to an increase in GDPpc and a decrease in GHGpc and Unemployment, while the increase in the Recycling rate of municipal waste led to an increase in GDPpc and a decrease in Unemployment. Finally, the increase in the Circular material use rate only led to a decrease in Unemployment, while the impact on GDPpc and GHGpc was statistically insignificant. These results are aligned with several previous research in this area (Vuţă et al., 2018; Georgescu et al., 2022; Knäble et al., 2022). Although these studies highlighted the potential for significant economic benefits from the transition to a circular economy in the EU, they underscore the complexity of this transition and the need for supportive policies and strategies to fully realize these benefits.

Therefore, the following recommendations should be considered by policymakers in shaping the transition to a circular economy in the EU:

- Creating a favourable policy framework by developing and implementing policies that provide a clear and supportive regulatory environment for circular economy practices. This includes setting ambitious targets for resource efficiency, waste reduction, and recycling rates, as well as implementing extended producer responsibility schemes. Also, it is important to provide financial incentives and tax benefits to companies adopting circular business models, such as tax credits for eco-innovation or reduced VAT rates for recycled products.
- Fostering collaboration and knowledge sharing between policymakers, businesses, research institutions, and civil society organizations to facilitate knowledge exchange and learning. This includes establishing platforms and networks that promote the sharing of best practices, success stories, and lessons learned in implementing circular economy principles.

Additionally, it is necessary to support the development of industry clusters and innovation hubs where companies can collaborate and leverage each other's expertise and resources.

- Investing in research and development through the allocation of funds for research and development programs focused on circular economy technologies, processes, and business models. This involves supporting innovative projects that explore new ways to design products for durability, recyclability, and repairability, as well as encouraging the development of circular supply chains and new recycling technologies that can effectively recover valuable materials from waste streams.

- Providing financial support and access to capital by creating financial mechanisms and support schemes to facilitate access to capital for companies implementing circular economy practices. This involves the establishment of dedicated funds or grant programs that provide financial assistance for circular economy projects, such as pilot projects for circular business models or investments in circular infrastructure. Additionally, it is vital to encourage the integration of circular economy criteria in public procurement processes to create market demand and support circular businesses.

- Promoting education and skills development by investing in education and training programs to enhance the skills and knowledge required for the circular economy transition, and providing resources and training opportunities for entrepreneurs, managers, and employees to understand and implement circular economy principles in their respective sectors. Besides, it is crucial to foster partnerships between educational institutions and businesses to develop curricula and training courses tailored to circular economy skills.

- Enhancing data collection and monitoring by establishing and enhancing the data collection systems to track and monitor progress towards circular economy goals. This involves collecting data on resource consumption, waste generation, recycling rates, and the environmental and economic impacts of circular economy practices, and using this data to evaluate the effectiveness of policies and programs, identify areas for improvement, and inform evidence-based decision-making.

- Engaging stakeholders including businesses, consumers, and civil society organizations to raise awareness about the benefits of the circular economy and promote behaviour change through launching public campaigns and awareness initiatives to encourage consumers to choose sustainable and circular products and services. Also, this involves encouraging companies to communicate their circular economy initiatives and achievements to build consumer trust and loyalty.

By implementing these recommendations, policymakers can effectively support companies in the implementation of circular economy principles in EU countries and eventually contribute to a more sustainable and resilient economy, resource efficiency, waste reduction, and the creation of new business opportunities and jobs. Nonetheless, in the research on the relationship between circular economy indicators and sustainable development, several gaps remain. First, there is a need for more comprehensive studies that consider a broader range of circular economy indicators. Second, research focusing on the comparison between EU and non-EU countries could provide valuable insights into the unique challenges and opportunities associated with implementing a circular economy within the EU. Finally, future research should aim to understand the role of country-specific factors in shaping the relationship between circular economy indicators and sustainable development.

LITERATURE:

1. Bianchi, M., & Cordella, M. (2023). Does circular economy mitigate the extraction of natural resources? Empirical evidence based on analysis of 28 European economies over the past decade. *Ecological Economics*, *203*, 107607.
2. Busu, M. (2019). Adopting circular economy at the European Union level and its impact on economic growth. *Social Sciences*, *8*(5), 159.
3. Busu, M., & Trica, C. L. (2019). Sustainability of circular economy indicators and their impact on economic growth of the European Union. *Sustainability*, *11*(19), 5481.
4. Chen, C. C., & Pao, H. T. (2022). The causal link between circular economy and economic growth in EU-25. *Environmental Science and Pollution Research*, *29*(50), 76352-76364.
5. Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. (3rd ed.), Psychology Press, New York.
6. EEA (2016). Circular economy in Europe - developing the knowledge base: report 2. European Environment Agency. Available at: https://www.eea.europa.eu/publications/circular-economy-in-europe.
7. Ellen MacArthur Foundation (2013). Towards the circular economy. *Journal of Industrial Ecology, 2*(1), 23-44.
8. Eurostat (2023). Circular Economy Monitoring Framework. Available at: https://ec.europa.eu/eurostat/web/circular-economy/monitoring-framework
9. Georgescu, I., Kinnunen, J., & Androniceanu, A. M. (2022). Empirical evidence on circular economy and economic development in Europe: a panel approach. *Journal of Business Economics and Management*, *23*(1), 199-217.
10. Gujarati, D.N. (2004). *Basic Econometrics*. 4th Edition, McGraw-Hill Companies.
11. Hysa, E., Kruja, A., Rehman, N. U., & Laurenti, R. (2020). Circular economy innovation and environmental sustainability impact on economic growth: An integrated model for sustainable development. *Sustainability*, *12*(12), 4831.
12. Kara, S., Hauschild, M., Sutherland, J., & McAloone, T. (2022). Closed-loop systems to circular economy: A pathway to environmental sustainability?. *CIRP Annals, 71*(2), 505-528.
13. Knäble, D., de Quevedo Puente, E., Pérez-Cornejo, C., & Baumgärtler, T. (2022). The impact of the circular economy on sustainable development: A European panel data approach. *Sustainable Production and Consumption*, *34*, 233-243.
14. Magazzino, C., Mele, M., & Schneider, N. (2020). The relationship between municipal solid waste and greenhouse gas emissions: Evidence from Switzerland. *Waste Management*,*113*, 508-520.
15. Marković, M., Krstić, B., & Rađenović, T. (2020). Circular economy and sustainable development. *Economics of sustainable development*, *4*(1), 1-9.
16. Mazur-Wierzbicka, E. (2021). Circular economy: advancement of European Union countries. *Environmental Sciences Europe*, *33*, 1-15.
17. McKinsey (2017). *Mapping the benefits of a circular economy*. McKinsey & Company.
18. Mongo, M., Laforest, V., Belaïd, F., & Tanguy, A. (2022). Assessment of the Impact of the Circular Economy on CO_2 Emissions in Europe. *Journal of Innovation Economics & Management*, I107-29.
19. Moraga, G., Huysveld, S., Mathieux, F., Blengini, G. A., Alaerts, L., Van Acker, K., ... & Dewulf, J. (2019). Circular economy indicators: What do they measure?. *Resources, Conservation and Recycling*, *146*, 452-461.
20. Popović, A., Ivanović-Djukić, M., & Milijić, A. (2022). Assessment of the impact of Circular Economy competitiveness and innovation on European economic growth. *The European Journal of Applied Economics*, *19*(2), 1-14.

21. Robaina, M., Villar, J., & Pereira, E. T. (2020). The determinants for a circular economy in Europe. *Environmental Science and Pollution Research*, *27*, 12566-12578.

22. Tantau, A. D., Maassen, M. A., & Fratila, L. (2018). Models for analyzing the dependencies between indicators for a circular economy in the European Union. *Sustainability*, *10*(7), 2141.

23. Trica, C. L., Banacu, C. S., & Busu, M. (2019). Environmental factors and sustainability of the circular economy model at the European Union level. *Sustainability*, *11*(4), 1114.

24. Vranjanac, Ž., Rađenović, Ž., Rađenović, T., & Živković, S. (2023). Modeling circular economy innovation and performance indicators in European Union countries. *Environmental Science and Pollution Research*, 1-12.

25. Vuţă, M., Vuţă, M., Enciu, A., & Cioacă, S. I. (2018). Assessment of the circular economy's impact in the EU economic growth. *Amfiteatru Economic*, *20*(48), 248-261.

DETERMINANTS OF RESIDENTIAL ENERGY CONSUMPTION: A CASE STUDY OF THE EUROPEAN COUNTRIES

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ABSTRACT
Urban landscape has faced with substantial social, economic and environmental challenges due to uncontrolled growth of cities and regions during the past century. The unprecedented demographic growth and the consequent changes in the landscape give rise to extensive sustainability challenges such as ecosystem degradation, loss of agricultural and natural land resources, and shortage or unequal distribution of water resources and associated infrastructure. Cities and urban regions can be considered as one of the key sources of energy resources consumption and significant contributors to greenhouse gases emissions due to inefficiency of built environment and transportation activities. Energy consumption reduction and the use of renewable energy sources are recognized as governmental priorities in the context of green economy and sustainable development. In the recent decades, research and policy analysis are mainly centered on reduction of energy consumption and mitigation of environmental degradation. However, the literature on socio-economic and spatial determinants of non-renewable energy consumption in the European Union (EU) countries is scarce. The literature focuses on either non-spatial determinants of energy consumption or spatial determinants were considered at the country level and there are few studies utilizing the regions as the unit of analysis. Therefore, the study aims at quantifying and analyzing the spatial determinants of non-renewable residential energy consumption at the NUTS3 (nomenclature of territorial units for statistics) regional level in the EU countries (https://ec.europa.eu/eurostat/web/nuts/history) for a better understanding of the determinants of energy consumption and its policy implications.
Keywords: Residential energy consumption, Random Forest (RF) classification, Spatial econometric models, NUTS3 regions, Europe

1. INTRODUCTION

Urban populations are expected to increase in the upcoming decades as the majority of people on Earth live there. Due to inefficient built environments and transportation network, cities and urban areas can be considered main users of energy resources and significant contributors to greenhouse gases emissions. Energy efficiency and pollutant reduction in residential buildings are key to developing sustainable cities and urban regions as urbanization continues to lead to a larger share of energy consumption that over time indicates significant negative effects on well-being and sustainability. Although carbon-intensive systems are prevalent in many European nations, a structural shift toward the use of renewables in several areas of economy is occurring (EEA, 2017). The updated Energy Efficiency Directive (EU2018/2002) entered into force in 2018, setting a headline EU Energy Efficiency Target of at least 32.5% for 2030, with a process allowing a possible upward revision by 2023 (EC, 2022). Residents can make a significant contribution to lowering greenhouse gas emissions by implementing energy efficiency measures and utilizing non fossil energy products. The factors that determine household energy use have therefore gained attention because they can help us better understand those factors, as well as the effects those factors have on the environment and socio-economic well-being. There has been increasing number of studies focusing on energy consumption in Europe.

The most recent research utilizes country totals as the analysis unit and focuses on the factors that have an impact on energy consumption throughout entire Europe (Filipovic et al., 2015; Andrei et al., 2017; Popescu et al., 2018). Other studies are underway in Europe at the regional or municipal levels with the goal of identifying the variables that influence energy use and efficiency. For instance, Navamuel et al. (2018) utilised regression analysis approach to investigate the influence of urban sprawl on energy use in Spain. They confirmed that single family dwellings increase energy demand whereas urban agglomeration had the reverse effect. The socio-economic factors affecting Greece's energy consumption from 1975 to 2013 were examined by Azam et al. (2016), who identified urbanization, trade, infrastructure, income, population growth and foreign direct investment as the key determinants of energy consumption. The literature in this area is focused on national research that uses micro level data sets to explore the factors that influence energy use (Belaid, 2017; Borozan, 2018; Fuerst et al., 2020). The drivers of energy use in Europe from a spatial perspective were rarely mentioned in the covered literature, whether it was country level research or a micro-level analysis. Although the foundation of these studies is based on the common assumption that regions are spatially independent, there is likely to be a strong spatial dependence and spatial spillover effects in the link between energy consumption and its determinants. It is on this ground that this study adds to the body of knowledge on the factors that influence energy use using the NUTS3 regions of the EU27+UK countries as a case study for the years 2002 and 2012. To analyse the effects of particular factors on household energy consumption, this study uses spatial econometric approaches as opposed to other studies, which modelled energy consumption using non-spatial regression analysis.

2. DATASET AND VARIABLES

The dataset used in this study was obtained from Eurostat, European Environment Agency (EEA) and European Commission ESPON project databases including also other official European sources. The independent variables relate to a cross-section data whereas the dependent variable represents the change in energy consumption between 2002-2012 period. The dataset offers details on mobility, land cover, natural hazards, governance, energy, air quality, green economy, location and regional characteristics in addition to a variety of socioeconomic traits and economic activities (see Table A1 in the appendix). The dependent variable was calculated by subtracting the final energy demand for space heating and cooling, water heating, appliances and lighting and gas for cooking in the residential sector of the year 2002 from the final energy demand of the subject uses in the residential sector of the year 2012. The change data is the final energy demand per capita represented by KWh/capita. These indicators for the years 2002 and 2012 were obtained from the database of the ESPON (2018)-LOCATE-Territories and Low Carbon Economy Project.

3. METHODOLOGY
3.1. Variable selection with Random Forest (RF) method

RF classification is an ensemble method of machine learning where a set of classification trees are trained using bootstrapped samples from the training data (Breiman, 2001). Within the context of this study, each tree of a RF is composed of energy consumption determinants based on pure mathematics. Bagging is a method used in RF algorithm used to generate a training data set by randomly drawing data from the original dataset or a randomly selected part of training set be used in the construction of individual trees for each feature combination (Breiman, 1996). In each bootstrapped sample, about two-thirds of the training data are used to grow a regression tree and one-third of the sample (the out-of-the-bag samples) is used to estimate the out of bag (OOB) error. Each tree gives a classification which is validated using the OOB data and the RF predictor is formed by averaging of generalisation error over k trees.

A method within the RF framework of calculating the importance of the variable is the Gini measure. Gini importance score provides a relative ranking of the features, which is a by-product in the training of the random forest classifier. It is used as one of the important ways for selecting the best split in a RF and measures the impurity of a selected variable. According to this method, the more reduction in Gini index caused by variable changes, the more important the variable is (Foody and Arora, 1997). The RF classification approach applied in this study used the Gini Index as a proxy for measuring the importance of each indicator and based on their importance, the variables were selected accordingly to be included in the regression analysis.

3.2. Moran Index

It is important to distinguish whether there is an adjacency relationship of the geographical areas where households consume energy from residential sources. The spatial statistical methods are used to reveal spatial characteristics of a dataset by reflecting the mean difference between a range of spatial units and their adjacent units (Anselin, 1995). The spatial weight matrix W is used to describe the spatial-geospatial linkages across different data points. As one of the techniques of spatial statistical analysis, the explanatory spatial data analysis (ESDA) is used to analyse spatial autocorrelation by identifying spatial dependence and heterogeneity (Liu et al., 2013). One of the most commonly used ESDA indicators is the Global Moran's I (GMI). In this study, the spatial correlation of residential energy consumption across the NUTS3 regions was calculated using the GMI index as given in equation below using ArcGIS software.

$$GMI = \frac{n}{\sum_i (x_i - \bar{x})^2} \frac{\sum_i \sum_{j \neq i} W_{ij}(x_i - \bar{x})(x_j - \bar{x})}{\sum_i \sum_{j \neq i} W_{ij}}$$

Where n represents the number of spatial units i.e. NUTS3 regions; x_i and x_j are the values of the tested variables; $\bar{x} = (\sum_i x_i)/n$ is the average value of the tested variable; W_{ij} represents the corresponding value in the spatial weight matrix. A GMI index equals to 1 indicates that the variable has completely positive spatial correlation whereas a value of -1 means that the variable has completely negative spatial correlation. GMI equals to 0 shows that there is no spatial correlation in the subject variable.

3.3. Spatial econometric models

Not considering the spatial impacts may cause the traditional econometric models to fail (Anselin, 1988). For these reasons, spatial econometric models were constructed to improve accuracy and robustness of the results. The common spatial econometric models include a Spatial Auto Regression (SAR) model, a Spatial Error Model (SEM) and a Space Durbin Model (SDM) (Long et al., 2016). Spatial econometric models extend linear regression through allowing outcomes of one area to be influenced by (a) outcomes of nearby areas, (b) covariates from nearby areas and (c) errors from nearby areas. Spatial correlation is reflected in the dependent variable in case of the SAR given by the following formula:

$$= \rho WY + X\beta + \varepsilon; \varepsilon \sim N(0, \delta^2 I_n)$$

Where Y represents the dependent variable; W is the normalised spatial weight matrix which characterise the spatial relationships between areas; ρ is the spatial regression coefficient, which reflects the spatial effect of the adjacent area observation value WY on local observation value; X represents the independent variables and βs are their coefficients; and ε is the error term. The Spatial Error Model (SEM) investigates the spatial dependence existing in the error term indicating that spatial spill over effects are present in the error term.

The SEM is given by

$$Y = X\beta + \lambda W\mu + \varepsilon; \ \varepsilon \sim N(0, \delta^2 I_n)$$

Where ε is the random error term; λ is the space error coefficient of the error term; and μ represents the normally distributed random error term. If both the dependent variable and independent variables reflect the spatial correlation, we have the Spatial Durbin Model (SDM) which is shown in equation below

$$Y = \rho WY + X\beta + WX\gamma + \varepsilon; \ \varepsilon \sim N(0, \delta^2 I_n)$$

Where WX represents the spatial lag explanatory variables, which has been introduced to enhance the SAR model; and γ represents the coefficient of spatial lag independent variables.

4. RESULTS
4.1. Regression diagnostics
In order to acquire a comprehensive understanding of the factors explaining residential energy consumption in Europe, first, the most important variables were selected using the RF classifier, and the important variables from the RF were included in the spatial regression models i.e. SAR, SEM, and SDM. Regarding the spatial regression analysis, the Wald test indicated that the overall models had statistical significance (p<0.001) and the value of the adjusted R-squared ranging from 0.71 to 0.77 showed a relatively high goodness-of-fit. Multicollinearity was controlled with variance inflation factors (VIFs), which did not pose a problem in the current models where all the variables show below 10.0. Prior to the application of the spatial regression models, an OLS model was estimated using the same explanatory variables and the error terms from this model were used to compute the Global Moran's Index (GMI) (Table 1).

	Method 1	Method 2	Method 3
Moran's Index	0,059422	0,188875	0,014621
Expected Index	-0,001437	-0,001437	-0,001437
Variance	0,000058	0,000300	0,000016
z-score	7,993,795	10,981,421	4,006,568
p-value	0,000000	0,000000	0,000062
Conceptualization:	INVERSE_DISTANCE	K_NEAREST_NEIGHBORS	FIXED_DISTANCE
Distance Method:	EUCLIDEAN	EUCLIDEAN	EUCLIDEAN

Table 1: The results from Global Moran's Index

Three different methods including inverse distance, K-nearest neighbours and fixed distance were used to compute GMI. The results from these methods indicate that residential energy consumption point to significant agglomeration characteristics. Moran's index is greater than 0, so it can be concluded that energy consumption exhibits positive agglomeration, which means high energy consumption areas are surrounded by regions with high energy consumption values, low energy areas are surrounded by regions with low energy consumption values. Because there is spatial autocorrelation which OLS model does not take into consideration means that findings from OLS model may not be robust. Therefore, spatial regression models were utilised to quantify the determinants of residential energy consumption in Europe.

4.2. Estimation results
It can be seen that (Table 2) GDP per capita is one of the significant factors determining residential energy consumption in Europe. Its coefficient is positive in all regressions indicating that GDP per capita is positively associated with energy consumption levels.

Economically active population is negatively associated with energy consumption indicating that the regions with higher population i.e., more urbanised regions economize the energy use. Unemployment rate and poverty rate are also negatively related to energy consumption where the former variable is insignificant in some regressions whereas the latter is significant in all. This implies that if the regions are characterised by income constraints, they have declining energy use at the household level. The case where the residents are supported with the government funding is represented by the variable 'Fund_gov_supp', which has an expected positive coefficient indicating that the increase of government support increases energy consumption of the regions. Quality and accountability of government services are expected to decrease energy consumption of the regions and increase environmental quality: Government quality variable has an expected negative sign in some regressions and positive in others showing that it is not a robust variable. Therefore, the models cannot capture the impact of government quality on residential energy consumption. Patent applications and index of access to technology are the two variables that are both significant and negatively related to energy consumption in all regressions given that these represent existence of high technological industries, which are more energy efficient compared to traditional industries. Market demand and share of self-employed people are positively correlated with energy consumption considering that high share of employment and market demand increase energy consumption in the regions. Price of gas for heating and price of Euro-super 95 per 1000L are important drivers of energy consumption. The results show that higher energy prices lead to less energy use in the former case while the reverse occurs in the latter. The price of Euro-super 95 can be considered as a proxy for the unincluded variables in the regressions and the positive coefficient of this variable may reflect the impact of the proxied variables on the dependent variable. An increment of NO_2 emissions in a region decreases energy consumption indicating that the more NO_2 emissions are produced, the lower level of residential energy consumption we can report. NO_2 emissions is the consequence of burning fossil fuels; therefore, when energy consumption increases, NO_2 emissions also increase. The results from the regression analysis indicate that there is reverse causality implying that the increase in air pollutants from NO_2, which have negative impacts on the environment, persuade residents to lower their energy consumption. The area of forest in a region is correlated with the typology of the region i.e. whether the region is rural or urban. The area of forest land use in rural regions are comparatively higher than that of urban regions. The coefficient of Forest is positive implying higher energy consumption in rural areas compared to urban areas. This is also verified by the coefficients of Urban_Region and Rural_Region variables, the former has a negative coefficient while the latter has positive coefficient. Building construction practices in urban regions include high density buildings with less heating and cooling requirements than detached or semi-detached houses that are frequently located in rural regions. The regional dummies showed that there are regional disparities in residential energy consumption where the energy consumption in western, eastern and southern regions are lower than that of the northern region (i.e., northern region is the base category, and the dummy variables of the other regions are equal to 1) as they have all significant and negative coefficients. It is also found that metropolitan regions consume less energy compared to other regions pointing to the agglomeration effects in metropolitan regions that reduce the demand for energy consumption. Northern regions use more energy compared to other regions due to climatic factors, which are characterised by humid, cold winters, and mild, humid summers. The variable Cool_days also verify the impact of climate on energy use indicating that the number of the cool days experienced in a region are positively associated with residential energy consumption. The natural disasters variables are Econ_dam_draught and Econ_dam_wind; the former is significant and negative in all regressions whereas the latter is insignificant with an unexpected positive sign. This showed that natural disasters i.e., draught are affecting energy consumption negatively and wind is not a robust variable.

Variables	SAR Coefficient	z	SAR Coefficient	z	SEM Coefficient	z	SEM Coefficient	z	SDM Coefficient	z	SDM Coefficient	z
Constant	0.5517**	3.91	1.1301**	6.32	0.3022**	2.08	0.0935	1.16	0.2851**	3.2	0.9875**	5.82
Eco_act_pop	-0.0003**	-5.75	-0.0003**	3.06	-0.0001**	-3.15	-0.0001	-1.21	-0.0001	-1.4	-0.0003	-0.48
Unempl_rate	-0.0166	-1.17	-0.0553**	3.73	-0.0232*	-1.66	-0.0196	-0.85	-0.0181	-0.66	-0.0566**	-3.79
Pov_excl	-0.0418**	-3.8	-0.0231*	1.88	-0.0299**	-2.72	-0.0118	-0.73	-0.0408**	-2.43	-0.0297**	-2.47
Pat_appl	-0.0076**	-2.21	-0.0006**	2.59	-0.005*	-1.78	-0.0004**	-2.68	-0.0005**	-2.09	-0.0006**	-2.55
Access_Tech	0.6167**	2.53	0.3516	1.46	0.8821**	3.15	0.7867**	2.54	0.9574**	2.90	0.2246	0.91
Market_dem	4.083**	6.11	4.0908**	4.12	7.132**	9.62	2.6471**	2.70	7.3442**	4.14	6.1271**	5.30
GDP_cap	0.0001**	2.52	0.0001*	1.60	0.0001**	3.42	0.0001*	1.29	0.0001**	2.65	0.0001**	2.67
Prvt_enterpr	0.0753**	7.51	0.0447**	2.61	0.0794**	7.93	0.0554**	2.78	0.0753**	4.35	0.0429**	2.37
Euro-super 95	0.0001**	10.89	0.0001**	8.23	0.0001**	10.4	0.0001**	3.44	0.0001**	7.14	0.0001**	7.77
Gas oil_automobile	0.0001	1.21	0.0001	0.99	-0.0001	-0.04	0.0001	1.54	-0.0001	-0.06	0.0001	0.93
Gas oil_heating	-0.0002**	-9.82	-0.0001**	8.32	-0.0001**	-8.23	-0.0001**	-4.09	-0.0001**	-6.99	-0.0001**	-8.21
Forest	0.0201**	7.04	0.0235**	5.16	0.0217**	7.88	0.0121**	2.23	0.0214**	4.93	0.0232**	5.44
Econ_dam_drought	-30.175**	12.99	-36.3995**	9.06	-27.3442**	12.21	-28.0427**	-5.83	-27.2709**	-6.24	-37.0275**	-9.49
Econ_dam_wind	1.0584	0.55	2.4557*	1.60	-0.4905	-0.26	5.7528**	3.17	-0.3764	-0.25	2.1138	1.37
Gov_qual	-0.0076	-0.08	0.2848**	2.95	0.1976**	2.12	0.4874**	3.66	0.1711*	1.62	0.2746**	2.94
Fund_gov_supp	1.6844**	5.97	1.7245**	6.13	1.2453**	4.16	1.3983**	3.97	1.3125**	3.45	1.4259**	4.89
PhElExpT	0.0061**	3.06	0.0061**	3.26	0.0047**	2.44	0.0031*	1.83	0.0050**	2.7	0.0071**	3.90
Cool_days	0.0117**	3.39	0.0071	0.8	0.0156**	4.64	0.0248*	1.69	0.0146	1.29	0.0072	0.77
BioFuPoT	0.0001**	2.47	0.0001	0.80	0.0001	1.09	-0.0001	-0.22	0.0001	0.42	-0.0001	-0.06
NO2_emission	-0.0379**	-2.38	-0.0096	-0.57	-0.0197	-1.19	-0.0258	-1.09	-0.0204	-0.77	-0.0337*	-1.83
Sphere_2	0.0143**	4.32	0.0198**	4.89	0.0061*	1.57	0.0227**	5.30	0.0041	0.7	0.0119**	2.66
Sphere_3	0.0324**	6.67	0.0248**	4.33	0.00273**	5.71	0.0229**	3.24	0.0278**	4.31	0.0241**	4.21
Sphere_4	0.0021	0.58	0.0096**	2.05	0.0012	0.33	0.0094**	1.92	0.0017	0.39	0.0109**	2.39
Metropol	-1.1182**	-2.02	-0.2694**	3.17	-0.1448*	-1.65	-0.1276**	-2.28	-0.1209*	-1.63	-0.2451**	-2.97
Western	-0.6474**	-3.97	-	-	-1.314**	-6.68	-	-	-1.2542**	-3.99	-	-
Eastern	-1.531**	-6.95	-	-	-2.3692**	-8.85	-	-	-2.3729**	-5.49	-	-
Southern	-2.2267**	-7.9	-	-	-2.8419**	-9.55	-	-	-2.7583**	-5.14	-	-
Urban_Region	-0.1926**	-1.69	-	-	-0.2891**	-2.62	-	-	-0.2212**	-2.18	-	-
Rural_Region	0.0734*	1.74	-	-	0.1159*	1.26	-	-	0.1008	0.55	-	-
Western_Urban	-	-	0.118*	1.12	-	-	0.0202	0.23	-	-	0.1442	1.26
Eastern_Urban	-	-	-0.1367	0.54	-	-	-0.1221	0.52	-	-	-0.2857	-1.15
Southern_Urban	-	-	-1.128**	2.96	-	-	-0.7175**	-2.92	-	-	-0.9936**	-2.68
Western_Rural	-	-	0.1134	0.72	-	-	-0.0624	-0.45	-	-	0.1732	1.13
Eastern_Rural	-	-	-0.5541**	2.30	-	-	-0.3886*	-1.43	-	-	-0.6659**	-2.73
Southern_Rural	-	-	-0.5681*	1.30	-	-	-0.1978	-0.48	-	-	-0.5573	-1.26
No. Observations	1399		1399		1399		1399		1399		1399	
Wald chi2	4558.68		10879.22		4263.73		8214.2		15,405.8		13,557.40	
Prob>chi2	0.000		0.000		0.000		0.000		0.000		0.000	
Pseudo R2	0.76		0.76		0.71		0.72		0.74		0.77	
Wald test of spatial terms	chi2(1)=15.0**		chi2(1)=23.18**		chi2(1)=192.9**		chi2(1)=406.81**		chi2(4)=288.06**		chi2(4)=69.74**	

Table 2: Estimation results of spatial regression models for all regions in Europe

The potential for generating energy from renewable sources in the regions indicate a positive relationship with residential energy consumption. This was captured with the use of two variables i.e., exploitation rate of potential electricity generation by solar photovoltaics (PhElExpT) and primary energy potential of forestry products and forestry residues (BioFuPoT), both having significant and positive coefficients. The renewable energy sources are generally located in intermediate and rural regions, which are associated with higher energy consumption compared to urban regions. Green economic performance indices are negatively related to energy consumption. High-income economies allocate more resources to promote green economic growth. The current findings on green economic performance indices verify Fisher-Vanden et al. (2004), which argued that public budget on energy R&D has a positive impact on reducing energy intensity and on the reduction of greenhouse gases emissions.

5. CONCLUSION
Prior research has generally examined the energy consumption based on country level data or household level was also used in micro level studies. However, not much attention was given to the regional variations of residential energy consumption in Europe through application of

spatial regression models. This study contributes to the literature through developing a spatial model for the residential energy consumption using social, economic, technology, governance, natural hazards, and environmental variables and including typology of the regions into the regressions. The models were estimated by using European data obtained from various European sources and applying SEM, SAR, and SDM as econometric procedures. Endogeneity problems were corrected through including instrumental variables into the regressions. Based on a global perspective, Moran's Index was found to lie within the range from 0.01 to 0.18 and the existence of positive agglomeration was confirmed. Because OLS model may not be robust in case of spatial autocorrelation, spatial regression models were utilised to quantify the determinants of residential energy consumption in Europe. There are regional disparities in energy consumption where northern and central European regions consume more energy compared to eastern and southern regions. These regional variations can be explained with climatic and environmental factors as well as household attributes and life styles are influential. The residential energy demand is positively and significantly related to several variables including market demand, GDP per capita, government support, share of self employed persons, share of forest land use, number of cool days, and renewable energy potential. It is significantly and negatively related to gas prices, economically active population, poverty rate, patent applications, access to technology, natural hazards, air pollution, green economy, western, eastern and southern regions. The empirical results also showed that urban and metropolitan regions are negatively associated with energy consumption while rural regions are positively related in comparison to intermediate regions. European economic growth is occurring in intermediate and rural regions where economic growth in these regions promotes energy consumption. Urban and metropolitan regions, on the other hand, have population agglomerations and high-density development and benefit from these in reducing energy consumption. Therefore, more density regions should be developed to promote efficient agglomeration of industries and high-density development of residential land use and thus benefit from energy saving effects.

LITERATURE:
1. Andrei J V, Mieila M, Panait M (2017) The impact and determinants of the energy paradigm on economic growth in European Union. Plos ONE 12(3): e0173282.
2. Anselin L (1995) Local indicators of spatial association-LISA. Geograp Anal 2: 93-115.
3. Anselin L (1988) Spatial econometrics: Methods and models. Kluwer Academic, Dordrecht.
4. Azam M, Khan A Q, Zafeiriou E, Arabatzis G (2016) Socio-economic determinants of energy consumption: An empirical survey for Greece. Renew Sustain Energy Rev 57: 1556-1567.
5. Belaid F (2017) Untangling the complexity of the direct and indirect determinants of the residential energy consumption in France: Quantitative analysis using a structural equation modelling approach. Energy Pol 110: 246-256.
6. Borozan D (2018) Regional-level household energy consumption determinants: The European perspective. Renew Sustain Energy Rev 90: 347-355.
7. Breiman L (2001) Random forests. Machine Learn 45: 5-32.
8. Breiman L (1996) Bagging predictors. Machine Learn 24(2): 123-140.
9. Dijkstra L, Poelman H (2010) A revised urban-ruraltypology. In: Feldmann B, Önnerfors A (Eds) Eurostatregional yearbook 2010 (pp. 239–253). Publications Office of the European Union, Luxembourg. https://www.researchgate.net/publication/2542669 28_Downscaling_ European_urbanrural_typologies. Accessed 21 December 2022.

10. EC (2022) Energy efficiency targets. https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-targets_en Accessed 20 December 2022.
11. EEA (2017) Renewable energy in Europe-2017 update: Recent growth and knock-on effects. European Environment Agency Report no. 23/2017. Publications Office of the European Union, Luxembourg.
12. Filipovic S, Verbic M, Radovanovic M (2015) Determinants of energy intensity in the European Union: A panel data analysis. Energy 92(3): 547-555.
13. Fisher-Vanden K, Jefferson G, Liu H, Tao Q (2004) What is driving China's decline in energy intensity? Res Energy Econ 26(1): 77-97.
14. Foody G M, Arora M K (1997) An evaluation of some factors affecting the accuracy of classification by an Artificial Neural Network. Internat J Remote Sens 18: 799-810.
15. Fuerst F, Kavarnou D, Singh R, Adan H (2020) Determinants of energy consumption and exposure to energy price risk: a UK study. Immobilienökonomie 6: 65-80.
16. Liu Y, Lu S, Chen Y (2013) Spatio-temporal change of urban-rural equalized development patterns in China and its driving factors. J Rural Stud 32: 320-330.
17. Long R, Shao T, Chen H (2016) Spatial econometric analysis of China's province-level industrial carbon productivity and its influencing factors. App Energy 166: 210-219.
18. Navamuel E L, Morollon F R, Cuartas B M (2018) Energy consumption and urban sprawl: Evidence for the Spanish case. J Clean Product 172: 3479-3486.
19. Popescu G H, Mieila M, Nica E, Andrei J V (2018) The emergence of the effects and determinants of the energy paradigm changes on European Union economy. Renew Sustain Energy Rev 81(1): 768-774.
20. Ustaoglu E, Williams B (2017) Determinants of urban expansion and agricultural land conversion in 25 EU countries. Environ Man 60(4): 717-746.

APPENDIX

Table A1. Variable list and data sources

Dimension	Variable	Explanation	Scale	Source
Socio-economic characteristics	Eco_act_pop	Economically active population per km2	NUTS3	Eurostat (2016)
	Unempl_rate	Unemployment rate	NUTS2	Eurostat (2014)
	Pov_excl	People at risk of poverty or social exclusion	NUTS2	Eurostat (2015)
	Pat_appl	Number of patent applications per million inhabitants	NUTS3	Eurostat (2012)
Economic activities	Access_Tech	Index of access to technology	NUTS2	ESPON GREECO Project (2013) (https://database.espon.eu/project-data-package/968/)
	Market_dem	Index of expected market demand	NUTS2	ESPON GREECO Project (2013) (https://database.espon.eu/project-data-package/968/)
	GDP_cap	Gross Domestic Production (GDP) at current market prices in Euro per capita	NUTS3	Eurostat (2014)
	Prvt_enterpr	Share of self-employed persons on total employed persons	NUTS2	Eurostat (2014)
	Euro-super 95	Price of Euro-super 95 per 1000L	NUTS0	EC Weekly Oil Bulletin (2022) (https://energy.ec.europa.eu/data-and-analysis/weekly-oil-bulletin_en)
	Gas oil_automobile	Price of gas oil for automobile per 1000L	NUTS0	EC Weekly Oil Bulletin (2022) (https://energy.ec.europa.eu/data-and-analysis/weekly-oil-bulletin_en)
	Gas oil_heating	Price of gas oil for heating per 1000L	NUTS0	EC Weekly Oil Bulletin (2022) (https://energy.ec.europa.eu/data-and-analysis/weekly-oil-bulletin_en)
Land Cover	Forest	Share of forest land	NUTS3	EEA(2021) Ecosystem Extent Accounts, CLC (2012)
Natural hazards	Econ_dam_drought	Economic damage due to droughts, average of yearly impacts	NUTS3	ESPON TITAN Project (2018) (https://www.espon.eu/natural-disasters)
	Econ_dam_wind	Economic damage due to windstorms, average of yearly impacts	NUTS3	ESPON TITAN Project (2018) (https://www.espon.eu/natural-disasters)
Governance	Gov_qual	Quality and accountability of government services, health care, education and law enforcement	NUTS2	World Bank (2013)
	Fund_gov_supp	Index of access to funding and financial support	NUTS2	ESPON GREECO Project (2013) (https://database.espon.eu/project-data-package/968/)
Energy	PhElExpT	Exploitation rate of potential electricity generation by solar photovoltaics	NUTS3	ESPON LOCATE Project (2018) (https://www.espon.eu/low-carbon-economy)
	Cool_days	Distribution of cooling degree days between 2002 and 2012	NUTS3	ESPON LOCATE Project (2018) (https://www.espon.eu/low-carbon-economy)
	BioFuPoT	Primary energy potential of biofuels from agricultural products	NUTS3	ESPON LOCATE Project (2018) (https://www.espon.eu/low-carbon-economy)
Air quality	NO2_emission	Average NO2 concentration in a region	NUTS2	European Environment Agency (2013) (https://www.eea.europa.eu/data-and-maps/data/interpolated-air-quality-data-2)
Green economy	Sphere_2	Regional green economic performance index for social sphere	NUTS2	ESPON GREECO Project (2013) (https://database.espon.eu/project-data-package/968/)
	Sphere_3	Regional green economic performance index for territorial sphere	NUTS2	ESPON GREECO Project (2013) (https://database.espon.eu/project-data-package/968/)
	Sphere_4	Regional green economic performance index for economic sphere	NUTS2	ESPON GREECO Project (2013) (https://database.espon.eu/project-data-package/968/)

Dimension	Variable	Explanation	Scale	Source
Location	Western	Regions in Western Europe	NUTS3	Ustaoglu and Williams (2017)

	Eastern	Regions in Eastern Europe	NUTS3	Ustaoglu and Williams (2017)
	Southern	Regions in Southern Europe	NUTS3	Ustaoglu and Williams (2017)
	Northern	Regions in Northern Europe (base categry)	NUTS3	Ustaoglu and Williams (2017)
	Metropol	Regions classified as metropolitan regions	NUTS3	Dijkstra and Poelman (2011)
Regional characteristics	Urban_Region	Regions classified as predominantly urban regions	NUTS3	Dijkstra and Poelman (2011)
	Rural_Region	Regions classified as predominantly rural regions	NUTS3	Dijkstra and Poelman (2011)
	Intermediate_Region	Regions classified as predominantly intermediate regions (base category)	NUTS3	Dijkstra and Poelman (2011)

HYBRID CORPORATE REALITY SUPPORTED BY AI

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ABSTRACT
This research aims to investigate the attention phenomenon in real life in Hybrid Corporate Reality. The contribution of the present paper is a conceptual framework to examine the relationship between the human mindset and artificial intelligence. To inspect this problem in the real world, we consider transdisciplinary research essential. Based on the examined publications, we recognized that expert systems have a crucial role in connecting Mixed or Hybrid Reality and the phenomenon of attention. An examination of the publications matching our keyword combination demonstrated, that no research article matching our search has appeared in the last two decades. Therefore, the publications available from the results list also indicate a research gap. Further research with a different perspective is needed to identify the research gap accurately. This research gap was formulated from the ignorance of the element of the human mindset, primarily the phenomenon of attention in the research related to artificial intelligence.
Keywords: *Transdisciplinary, Mixed Reality, Hybrid Corporate Reality, Human mindset, Attention, Perception, Memory, Context, AI, Expert System*

1. INTRODUCTION

The essence of the transdisciplinary approach differs from the multidisciplinary, interdisciplinary approach, where the boundaries of disciplines can be described, to use Basarab Nicolescu's (2010, 2014) phrase, as country borders, which can in time vary. However, the boundary marks the territory as belonging to one country, and the continuity of the territories is constant. Mono-, multi- and interdisciplinary approaches, although not with the same purpose, treat these boundaries, namely the disciplines, as a sharp field, while "Transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines." (Nicolescu, 2010, p. 22). According to Nicolescu, through a transdisciplinary lens, the boundaries between disciplines are most similar to the separation between solar systems, stars and planets, where constant motion generates distance and the vacuum that exists between planets is not empty, and often this knowledge between the disciplines helps to understand the reality. The key concept of transdisciplinarity is the concept of Levels of Reality. In order to better understand a phenomenon through transdisciplinary lens, it comes through different disciplines, and we need to look beyond it. According to Baracskai and Dörfler (2017), transdisciplinarity provides some guidelines for researchers, whereby reality can be interpreted at three levels. The dialectical triad, according to the authors, is thesis-antithesis-synthesis, where synthesis provides the movement between levels of reality. In the context of attention, the thesis, the personal level of reality, is the human mindset, specifically the rules in long-term memory on the basis of which decisions can be made. Antithesis is also the algorithm of the expert system at the personal level, based on artificial intelligence. The synthesis, at the level of Hybrid Corporate Reality, is the organizational level of reality, that is, when it switches from human to machine knowledge.

The following are the concepts that are the subject of this paper, which are well understood to be sufficient to present relevant research questions or questions about the attention phenomenon in the Hybrid Corporate Reality. The definition of the hybrid term, Agnes and Guralnik (2002) stated in Webster's New World College as "anything of mixed origins, unlike parts. etc" (Agnes and Guralnik, 2002, p. 699), while the reality is described according to Farshid et al. (2018) as the experience with all our senses about the actual world. The term corporate is also "unite; combined" and "having a nature of, or acting by means of" Agnes and Guralnik (2002, p. 326), derived from the Latin word corporat. In this paper the hybrid corporate reality means, a reality that combines elements from the period before the explosion of digitalization and after the spread of the opportunities offered by artificial intelligence. Clarifying the concept is important because the term Hybrid Corporate Reality does not have an accepted definition that clarifies the underlying content. Several research, i.e., Hahn and Ince (2016) have focused on collecting the main features of Hybrid Business and introducing the resulting definition in connection with the research, but this has not happened until now. What Hybrid Corporate Reality might mean according to the transdisciplinary approach may be the subject of further research; The Hybrid Corporate Reality is used to simplify this contemporary reality in the way mentioned above. According to Nicholas Carr (2010), digitalization has changed the way we think, and constant disruptions and interruptions have changed our learning process, and thus our knowledge becomes shallow. However, it also stopped us from having an advantage if the achievements of digitalization were to be used wisely. We cannot focus our attention on one place for long because the increased number of impulses and interruptions that hit us unsolicited or not during our day prevents us from thinking in depth. Even before the advent of the Internet, economists and psychologists alike were interested in human attention. Related to Carr (2010) digitalization has changed the way we think, and constant interruptions have changed how we learn, making our knowledge superficial. At the same time, he has also argued, that we can benefit from digitalization if we use it wisely. Carr (2010) focuses on the use of computers and our online lifestyle and its impact on how our brains work. Nowadays, several researchers on the subject agree that increased stimulation and unsolicited distraction are reducing the opportunities for deep thinking. Sources of constant stimuli can include incoming emails, phone calls, etc. Economists and psychologists were concerned about human attention even before the advent of the Internet. As early as 1984, Herbert Simon (1984) noted that economists had not yet developed an understanding of the focus of human and social attention, which he considered essential. He considered that one way of understanding and developing a theory of attention was through the empirical study of human attention and attention shifts. Ulric Neisser (2014) , the father of cognitive psychology and a proponent of experimental psychology, summarized his research on attention, perception, pattern recognition, problem-solving and memory in a book published in 1967. According to Neisser (2014), our existing knowledge shapes our perception, through which experience influences our attention. Kahneman (1973) wrote about attention effort, that for activities that have been repeated and practiced repeatedly, we need to focus less attention to perform them. In addition to experience, human attention is also influenced by the environment of the observed phenomenon, object, etc. Contexts determine what we notice and associate with based on our experience. Many attention models have been created in the last decade. Cognitive psychologists have mainly studied human attention in laboratory settings, but their results have limited real-life applications. In addition to psychologists, sociologists, social scientists, neuroscientists, and economists are increasingly investing in the study of human attention. For example, Krieken (2020) focuses on the importance of the economy of attention on marketing, mass media, social networks, and community relations.
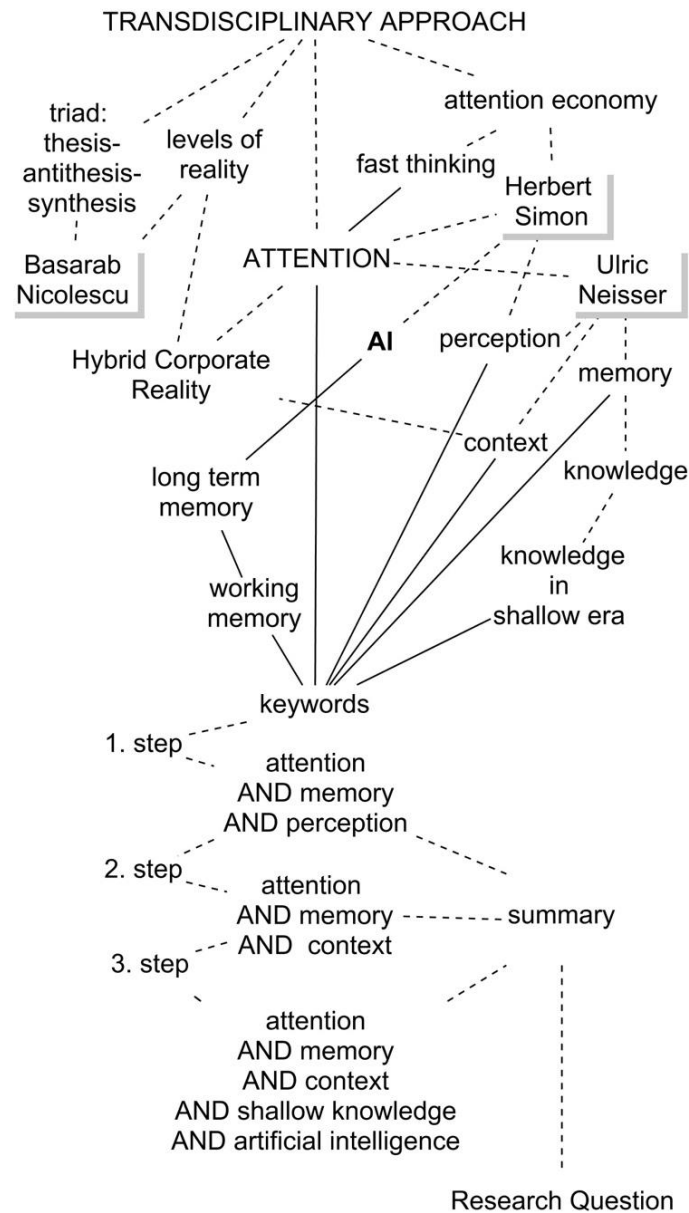
Figure 1: Conceptual framework to understand the relationship between the human mindset and artificial intelligence

Figure 1, the conceptual framework to understand the relationship between the human mindset and artificial intelligence, summarizes how the background knowledge is structured in the first place and what keywords are essential in order to formulate a relevant question or questions based on the literature summarized above. Attention plays a vital role in Hybrid Corporate Reality, as highlighted by the impact of digitalization. In the prevalence of Artificial Intelligence and the expansion of expert systems, economists and psychologists, among others, have been considered as a challenge to better understand the functioning of the human brain and the mechanisms of our decision-making. Herbert Simon, as Frantz (2003) noted, interpreted intuition as subconscious pattern recognition. Intuition is thus complementary to analytical thinking, and he pointed out that the human brain and its mechanisms of operation need not be regarded as mystical. According to Herbert Simon (1995), AI is also part of psychology and cognitive science alongside computer science, as it deals with phenomena around computers where they perform calculations and tasks that, if done by humans, would require intelligence and thinking.

2. DISCUSSION
The concepts shown in Figure 1 above, such as attention, AI, perception, context, memory, and knowledge in shallow, are the keywords of the present research, in which research questions or questions are formulated in Hybrid Corporate Reality.

2.1. Research Method
Mueller-Bloch and Kranz (2015) have created a framework that can be used to formulate Research Questions, Research Gap in the qualitative literature review. As Mueller-Bloch and Kranz (2015) stated, the terms Research Gap and Research question can be used synonymous, so this paper follows in synonym meaning. Digitalization has made research more convenient and faster through online publishing databases than in the age of printed river writings. To collect publications, the online journal search engine sciencedirect.com was used by logging into the interface related to Mueller-Bloch and Kranz (2015). The final search for publications was performed on 12 May 2023 on sciencedircet.com. Before the current keyword combinations were developed to find relevant researches, several test questionings were conducted.

2.2. Keywords
Built around the concept of attention, the chosen keywords are memory, perception, context, shallow knowledge AI. The simplification from knowledge in shallow era to the term shallow knowledge was justified to make searches as simple as possible. Although the keywords corporate or hybrid would be justified, their ignoration was necessary since hybrid is currently mainly used in the automotive industry, so it would not narrow the search. In the case of corporate, it became apparent from preliminary searches that few properly use this term among cognitive psychologists. Following Simon (1995), the term "B.C." has been given a new meaning, as we could legitimately use it for the Before Computers period, but in this study, among other things because of the unquestionable impact of digitization, the term AI as a further narrowing was used in the present paper.

2.3. Search of the literature
As a first step, as shown in Figure 1, the combination of the keyword was used; attention, memory and perception in AMP search. As clearly shown in the summary, the number of results in this case in Table 1 is 125 872. In the second stage, AMC search, the keyword perception with context was replaced, as the first search did not result in any publications in journals in Decision Sciences area. As the second search also produced many publications, further narrowing was considered necessary.

Search name	Keywords / Results				Total
AMP search	attention	memory	perception		125 872
AMC search			context		208 405
AMCSA search				shallow knowledge / AI	51

Table 1: Keyword combination search results

In the first search, the amount of the publications, tens of thousands per year, is not appropriate for formulating a research question or questions. In the third step, as shown in summary Table 1, the "shallow knowledge" as a keyword with AND AI were added. In this case, the 51 publications are already appropriate for quantitative analysis. The AMCSA search results list is the focus of this paper. Investigating the list of results containing 51 publications, the highest number of publications was in 1995, which was eight, averaged over the years by the number

of years of publication, the 18-year publication, the average is 2.89 publications per year. In the recent period, however, using the filter criteria provided, there were no publications for such keywords in the sciencedirect.com database between 2009 and 2023. The reason for this will be investigated in a further study. Table 2 shows a summary of the 42 publications narrowed down in the previous step by Publication title category, which indicates the title of the journal on sciencedirect.com.

Article Types/ Research Area	Engineering	Computer Science	Decision Science
Review Articles	1	1	0
Research Articles	20	13	8
Book Chapters	9	8	0

Table 2: Keyword combination search results

By article type, 1 Review Article, 35 Research Article and 15 Book Chapters were published between 1983 and 2023 based on search filter categorization. As the relevant research published in this study is in the fields of Engineering, Computer Science and Decision Science, further narrowing was necessary. From Figure 2, it can be assumed that there is an overlap between publications, since the total number of articles published in each type of journal does not match the 42 results.

2.4. Results
In 1987, Alty and Johannsen (1987), in an article published in the IFAC Proceedings summarized the techniques that could be applied to artificial intelligence and draws attention to the importance of human-centered design and the difficulties of managing dynamic systems at that time. Camarinha-Matos' (1987) publication on Automatic Plan Generation presented the first experiments in plan generation. Tsatsoulis and Kashyap (1988) research focused on the TOLTEC planner, which brings together expert knowledge-based and case-based reasoning. This application can design process plans, detect design errors, predict manufacturing defects, and recover from design errors. The application is designed based on empirical data and can improve its performance based on observed data through learning techniques. Furthermore, in the same year, Maier (1988), in his book, noted, using the example of China, that for all developing countries, "the computer industry is becoming not a question of status, but national survival". Stefanelli et al. (1988) put emphasis on real-life problems, understanding the structure of the problem and using diagnostic reasoning helps to build expert systems by not imposing the problem on the tool. The development of Toolkit, a composite software environment for enabling the design and development of Knowledge-Based Systems in the domain of Industrial Automation, is described by Leitch and Stefanini (1989). It explains how the tools were created, why they were created and the methodology that allows generic problems to be linked to the capability given by the tools. An overview of the representation languages and their accompanying inference methods is also provided. Zhang et al. (1989) in their paper propose a method for "preference degree analysis in multiobjective decision making problems (MDMP)", which they call a "multifactor analysis method based on a hierarchical analysis model" (1989, p. 13). Before 1990, according to Guarro (1990), the use of model-based reasoning in real-time process diagnostic and management applications has driven a broader convergence of methods and approaches. Since the 1980s, researchers have been actively researching the possibilities and limitations of managing dynamic systems. Since 1990, questions have been sought, i.e., learning with simulations (Goodyear et al., 1991), road networks (Kirschfink, 1993), as well as operational safety of nuclear power (Kim, 1994).

Vicente (1995) highlighted in his book chapter the backlog of researchers facing designers in "complex work environments" with advanced computer-based interfaces (Vicente, 1995). He defined EID as Ecological Interface Design, a theoretical framework for designing interfaces for human-machine systems. In the mid-90s, expert system applications in the field of power plant control and operation were even more emphasized (Kawai, 1996; Alty & Johannsen, 1989; Tworzydlo & Oden, 1995; Cheng, 1997). In 1992. in Computers & Industrial Engineering Journal Lee et al. (1992) discussed the Diagnostic System Prototype (DSP), which comprises a deep knowledge base and many shallow knowledge bases and demonstrates how it operates in detail.
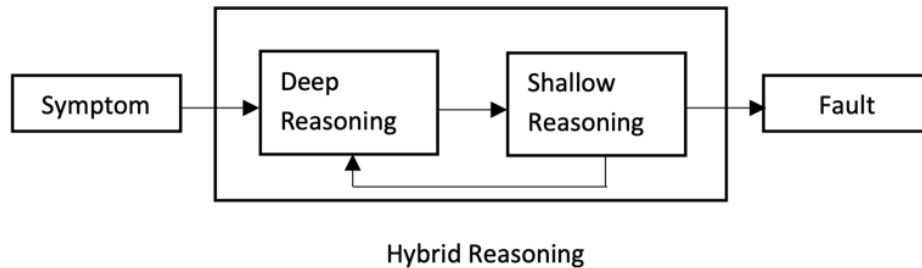
Figure 2: D-S (deep-shallow) type of hybrid reasoning
(Source: Lee et al., 1992, p. 339)

The difference between Deep and Shallow reasoning, shown in Figure 2, lies in speed and domain specificity. The authors recommend Deep reasoning, even though it is slower, since it is more thorough and sensitive for the possible alteration of the questions (Lee et al., 1992). Examining the initial 27 research article of the AMCSA search, the publications are about knowledge based expert-systems. A recent publication, that met the described search criteria, Venkatasubramanian (2001) argues that it is crucial to develop supervisory control systems that support plant operators, discuss fault diagnostic methods, and describe potential obstacles to process management and development trends. In this particular background, the researcher has explored the concepts of expert systems, knowledge engineering, plant automation, plant diagnosis and knowledge representation in the context of artificial intelligence. The latter topics were addressed from 1988 onwards (Tsatsoulis & Kashyap, 1988; Stefanelly et al. 1988), and the concept of knowledge engineering became the focus of researchers in the early 1990s (Tworzydlo & Oden, 1993). Examining the keywords, that were available in the sciencdirect.com database of publications from 1995, man-machine collaboration (Rogers, 1995), human-machine interface (Vicente, 1995) and model-based reasoning were highlighted in our framework. For example, Rogers's (1995) research aims to present a system based on human-machine collaboration in diagnostic radiology. In her view, the machine and the human should not be treated as separate entities in the performance of complex tasks. The "cooperative computer assistant" she presents helps the agent perform specific visual thinking tasks, enhancing its performance by combining perceptual and problem-solving abilities. According to Rogers (1995), the focus is "on understanding the underlying cognitive activities in the visual reasoning task" (p. 125) and thus calls upon appropriate visual and knowledge tools to collaborate effectively. In the 2022 book chapter, in Advanced digital design tools and methods, Casini (2022) examines the different levels of realities based on the keywords researched, such as augmented, virtual, extended or mixed reality. It can be concluded that the human mindset, in specific the phenomenon of attention, has been ignored of research on artificial intelligence was examined on the Google Books Ngram Viewer. For easier searchability, the process of integrating human factors, the concept of knowledge acquisition, was added to the resulting expert system, AI keywords.

The result that the human mindset, in specific the attention, has been removed from the focus of research on artificial intelligence was examined on the Google Books Ngram Viewer. Knowledge acquisition, the human factors integration process into the knowledge-based systems, was added to the resulting expert system, AI keywords for the appropriate search. The Google Books Ngram Viewer is an online search engine that displays the frequency of any set of strings in a user-defined period in Google English text corpora in Google books content. The result is shown in Figure 3 between 1960 and 2019.
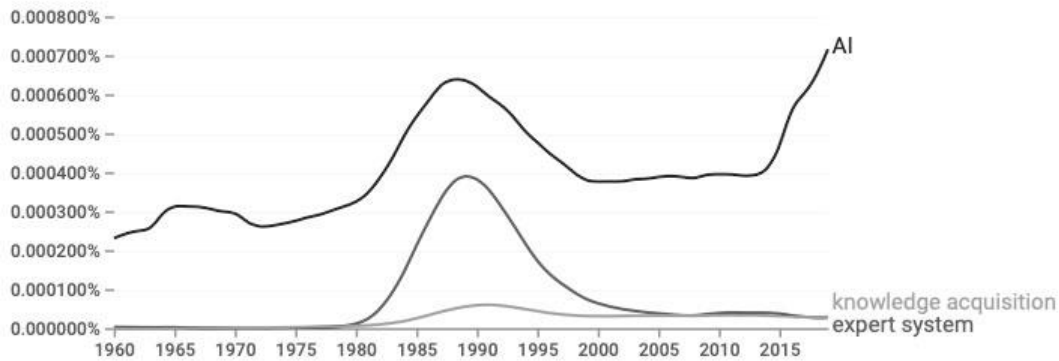
Figure 3: Expert system, AI, knowledge acquisition search results in Google Books Ngram Viewer
(Source: Google Books Ngram Viewer)

The peak in the AI line graph, which was 1988, was followed in 1989 by the peak in the expert system, and the expert system peaked two years later at a much lower value, although it reached the peak. From this graph, if we consider the years 1988 and 1990, we can see that this was when the expert systems had their renaissance. Google Books on AI have become popular again after 2015, as our search on sciencedirect.com can confirm.

3. CONCLUSION

The present research examined the attention phenomenon through the transdisciplinary lens— the concepts related to attention, memory, perception, and context in cognitive psychology. We also considered the notion of shallow knowledge, following Carr's (2010) statement, as he noted that in contemporary society, the constant stimuli arising from digitalization achievements are an obstacle to deep thinking. Deep thinking is the bridge between long and short-term memory, therefore its loss directs to shallow knowledge. By exploring the Hybrid Reality through the examined literature, we have recognised that AI is the connection between Mixed Reality and the phenomenon of attention. In this research, the contribution was a conceptual framework to investigate the relationship between the human mindset and artificial intelligence. Mueller-Bloch and Krantz (2015) have developed a research framework that guides researchers in formulating a research question or questions. We applied this method and conducted a series of stepwise searches for keywords that emerged with our conceptual framework. In our first two searches, which were for the keyword combinations attention-memory-perception and then attention-memory-context, we obtained 125 872 and 208 405 results for publications in the sciencedirect.com database. No publication from the Decision Science research area was included for the first AMP search. The mentioned research area is essential; the second AMC search, which included eight research articles regarding Decision Science, was narrowed down further. With the addition of the keywords shallow knowledge and AI, the number of publications found was 51, of which the research areas relevant to us, such as Engineering, Computer Science and Decision Science, yielded 42 publications. An overview of publications from different disciplines revealed that 27 research articles are related to expert systems.

While examining the 42 publications, it was also crucial that only three papers were published between 2009 and 2023, only in the book category. The reason for this will be the subject of further research. However, it can be concluded from the examined publications that since the 1990s, Hybrid Reality or Mixed Reality has disregarded the human mindset, primarily the phenomenon of attention. The study of the phenomenon of attention can be conceptualized as a research gap in research on expert frameworks in Hybrid reality. Further investigation is needed to support this research gap by examining the relationship between attention and Hybrid Reality from a different perspective. This paper provides a proper basis and starting point for deeper examination. Expert systems will be an integral part of further research, namely from the human factor perspective, i.e., weak AI, the importance of the role of attentional context in Hybrid Reality.

LITERATURE:
1. Agnes, M., & Guralnik, D. B. (2002). *Webster's New World College Dictionary* (M. Agnes & DavidB. Guralnik, Eds.; Fourth Edition). Wiley Publishing Inc.
2. Alty, J. L., & Johannsen, G. (1987). *Knowledge Based Dialogue for Dynamic Systems*. IFAC Proceedings Volumes, 20(5, Part 7), 327–336.
3. Alty, J. L., & Johannsen, G. (1989). *Knowledge-based dialogue for dynamic systems*. Automatica, 25(6), 829–840.
4. Baracskai, Z., & Dörfler, V. (2017). *An Essay Concerning Human Decisions.* Transdisciplinary Journal of Engineering & Science, 8, 71–82.
5. Camarinha-Matos, L. M. (1987). *Plan generation in robotics: State of the art and perspectives*. Robotics, 3(3), 291–328
6. Carr, N. (2010). *The Shallows: What the Internet Is Doing to Our Brains*. Atlantic Books
7. Casini, M. (2022). *Construction 4.0. Advanced digital design tools and methods.* Woodhead Publishing. 263–334.
8. Cheng, Y. (1997). A knowledge-based airport gate assignment system integrated with mathematical programming. Computers & Industrial Engineering, 32(4), 837–852.
9. Farshid, M., Paschen, J., Eriksson, T., & Kietzmann, J. (2018). *Go boldly! Explore augmented reality (AR), virtual reality (VR), and mixed reality (MR) for business*. Elsevier.
10. Frantz, R. (2003). *Herbert Simon. Artificial intelligence as a framework for understanding intuition.* Journal of Economic Psychology, 24(2), 265–277.
11. Goodyear, P., Njoo, M., Hijne, H., & J.A. van Berkum, J. (1991). *Learning processes, learner attributes and simulations.* Education and Computing, 6(3), 263–304.
12. Guarro, S. B. (1990). *Diagnostic models for engineering process management: A critical review of objectives, constraints and applicable tools.* Reliability Engineering & System Safety, 30(1), 21–50.
13. Hahn, R., & Ince, I. (2016). *Constituents and Characteristics of Hybrid Businesses: A Qualitative, Empirical Framework.* Journal of Small Business Management, 54, 33–52.
14. Kahneman, D. (1973). *Attention and effort.* Prentice-Hall.
15. Kawai, K. (1996). *Knowledge engineering in power-plant control and operation.* Control Engineering Practice, 4(9), 1199–1208.
16. Kim, I. S. (1994). *Computerized systems for on-line management of failures: a state-of-the-art discussion of alarm systems and diagnostic systems applied in the nuclear industry.* Reliability Engineering & System Safety, 44(3), 279–295.
17. Kirschfink, H. (1993). *Knowledge-based system for the completion of traffic data.* European Journal of Operational Research, 71(2), 247–256.
18. Krieken, R. van. (2020). *Economy of Attention and Attention Capital.* The Blackwell Encyclopedia of Sociology

19. Lee, W. Y., Alexander, S. M., & Graham, J. H. (1992). *A diagnostic expert system prototype for CIM.* Computers & Industrial Engineering, 22(3), 337–352.

20. Leitch, R., & Stefanini, A. (1989). *Task dependent tools for intelligent automation.* Artificial Intelligence in Engineering, 4(3), 126–143.

21. Maier, J. H. (1988). *Computer Science and Information Technology in the People's Republic of China: The Emergence of Connectivity.* In M. C. Yovits (Ed.), Advances in Computers (Vol. 27, pp. 363–458).

22. Mueller-Bloch, C., & Kranz, J. (2015). *A Framework for Rigorously Identifying Research Gaps in Qualitative Literature Reviews.* in Thirty Sixth International Conference on Information Systems, Fort Worth, 2015.

23. Neisser, U. (2014). *Cognitive psychology.* Taylor & Francis Ltd

24. Nicolescu, B. (2010). *Methodology of Transdisciplinarity–Levels of Reality, Logic of the Included Middle and Complexity.* Transdisciplinary Journal of Engineering & Science, 1(1), 19–38.

25. Nicolescu, B. (2014). *Methodology of transdisciplinarity.* World Futures, 70(3–4), 186–199.

26. Rogers, E. (1995). *Cognitive cooperation through visual interaction.* Knowledge-Based Systems, 8(2–3), 117–125.

27. Simon, H. A. (1984). *On the behavioral and rational foundations of economic dynamics.* Journal of Economic Behavior and Organizations, 5, 35–55.

28. Simon, H. A. (1995). *Artificial intelligence: an empirical science.* Artificial Intelligence, 77(1), 95–127.

29. Stefanelli, M., Lanzola, G., Barosi, G., & Magnani, L. (1988). *Modelling of Diagnostic Reasoning.* IFAC Proceedings Volumes, 21(1), 553–564.

30. Tsatsoulis, C., & Kashyap, R. L. (1988). *A system for knowledge-based process planning.* Artificial Intelligence in Engineering, 3(2), 61–75.

31. Tworzydlo, W. W., & Oden, J. T. (1993). *Towards an automated environment in computational mechanics.* Computer Methods in Applied Mechanics and Engineering, 104(1), 87–143.

32. Tworzydlo, W. W., & Oden, J. T. (1995). *Knowledge-based methods and smart algorithms in computational mechanics.* Engineering Fracture Mechanics, 50(5), 759–800.

33. Venkatasubramanian, V. (2001). *Process Fault Detection and Diagnosis: Past, Present and Future.* IFAC Proceedings Volumes, 34(27), 1–13.

34. Vicente, K. J. (1995). *Ecological Interface Design: A research overview.* Oxford: Pergamon, 1995, 623–628

35. Zhang, Z.-J., Yang, J.-B., & Xu, D.-L. (1989). *A Hierarchical Analysis Model for Multiobjective Decisionmaking.* IFAC Proceedings Volumes, 22(12), 13–18.

DATA ENVELOPMENT ANALYSIS OF MUNICIPAL SERVICES IN CROATIA

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ABSTRACT

The efficiency of municipal services in Croatia was measured in 2021 with inputs and outputs determined by methods of Data Envelopment Analysis (DEA). The work quality of Croatian municipal services is going to be shown in detail in this paper. Municipal services are defined as basic services provided to citizens in exchange for the fees and taxes they pay. These services include waste disposal, public and green areas, parking places, cemeteries, sanitation, water management and public transport. While lex specialis, the Utility Management Act, governs all important principles in the field of utility services, individual activities can also be regulated by special laws. In addition to other principles regulated by the legal framework, the paper will place special emphasis on the principles of quality of performing utility services, as well as economy and efficiency. The results of this analysis can be used to create future company guidelines for improving its efficiency and change practices in order to raise the quality of workmanship. DEA calculates the amount and type of cost and resource savings that can be achieved by making each inefficient unit as efficient as the most efficient – best practice – units. Identifying specific changes in the inefficient service units using DEA enables the management to implement and achieve potential savings. These changes would enhance the level of performance of efficient units and approach the best practice unit performance. The used DEA method was based on economic indicators to create an efficient municipal services management in the Republic of Croatia. The paper aims at exemplifying efficient municipal services management as well as determining sources of inefficiency for each inefficient municipal service and suggesting measures for potential improvement/rationalization.
Keywords: Data Envelopment Analysis, municipal services, efficiency

1. INTRODUCTION
Municipal services are defined as basic services provided to citizens in exchange for the fees and taxes they pay. These services include waste disposal, public and green areas, parking places, cemeteries, sanitation, water management and public transport. The municipal services' availability depends on an individual municipality as well as location, geography and status. Provided services vary from country to country or even within a country itself. Services may be run directly by a department of a particular municipality or by an external agent on behalf of the municipality in terms of a service delivery agreement. Croatian utility companies [15] often provide municipal services for their own municipality as well as the neighbouring ones. This is economically viable due to the economy of scale and reduction of costs. The representative bodies of local self-government units decide on the joint performance of utility

activities, with mutual rights and obligations regulated by a written contract. Funding for the provided services is variable and can include tax revenue (income tax, municipal sales tax), fees (for example, building permits), government grants, fines (for example, parking violations), or other sources such as profits from municipally owned utilities. In Croatia, utility management is an integral system for municipal services' performance, construction and maintenance of utility infrastructure and municipal order which applies in municipalities, cities and the City of Zagreb. Lex specialis, the Utility Management Act[1], regulates the principles of utility management, the performance and financing of utility services, construction and maintenance of utility infrastructure, payment of the utility contribution and utility fee, maintenance of municipal order and other important issues. In terms of the Utility Management Act, utility management means carrying out utility activities, particularly, provision of utility services and financing construction and maintenance of facilities and equipment of utility infrastructure as a comprehensive system in the area of local self-government units and counties. Considering that municipal services are vitally important for local population, the Utility Management Act has proven to be one of the fundamentally positive regulations for providing services in the area of local and regional self-government authorities. These services address the needs of citizens directly by providing public transport, maintenance of public surfaces, unclassified roads, retail markets, cemeteries and crematoriums, street-lights, and other services defined by the Act. Local self-government entities implement the Act and comply with the principles of utility management under supervision of the central state administration. Local self-government units and persons performing municipal services must act in accordance with the basic principles of these services. They are obliged to respect the public interest and enable the realization and protection of individual interests in a manner that does not contradict and harm the public interest while adopting and implementing utility infrastructure construction and maintenance[2]. On the other hand, building land owners who use the developed building land and infrastructure, i.e. the investors, are obliged to pay certain public dues in accordance with the principle of proportional benefit, while respecting the principle of solidarity. Municipal services are public services, and the services provided are of general interest. Such services are not provided for making a profit, but for the purpose of ensuring the delivery of municipal services to the users. In accordance with the principle of subsidiarity, the performance of utility activities and the delivery of municipal services is ensured at the level closest to the users. Access, availability and use of municipal services is provided to all users under equal and non-discriminatory conditions. Municipal services are delivered in a manner and under conditions tailored to the needs of the local community. Utility activities must be performed continuously in a manner that ensures the maintenance of the communal infrastructure in a state of functional capacity in order to achieve the continuous supply of municipal services. The delivery of municipal services to users can only be interrupted in exceptional and justified cases. The provider of municipal services is obliged to inform the public about the interruption of delivery and the reasons for this interruption in a suitable manner, immediately after becoming aware of the circumstances that caused the interruption. Utility activities are performed according to specifically regulated quality standards of the provision of municipal services. In accordance with the principles of economy and efficiency, the supplier of municipal services is obliged to act in an efficient, economical and purposeful way with the least costs for users. In addition to the above, equipping of building land with utility infrastructure and performing utility activities must be in accordance with the principles of protecting users, area, the environment and cultural

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[1] Utility Management Act. (Official Gazette No. 68/18, 110/18 and 32/20) [24].

[2] Utility infrastructure consists of: unclassified roads, public traffic areas where traffic of motor vehicles is not allowed, public parking lots, public garages, public green areas, construction works and public facilities, public lighting, cemeteries and crematoriums in cemeteries, and construction works intended for public transport. In addition to the above-mentioned construction works, the representative body of the local self-government unit can determine other municipal infrastructure construction works, if they serve for utility activities.

assets. Municipal services must be delivered in a safe manner[3] and in accordance with the principle of public interest[4]. Types of utility activities can be divided into utility activities that ensure the maintenance of utility infrastructure and service utility activities which provide individual users the services necessary for daily life and work in the area of the local self-government unit. In addition to these two main types, the representative body of the local self-government unit can determine by decision other activity that is considered as utility activity if such an activity continuously fulfills the vital needs of the population; if by its content and meaning the activity represents an irreplaceable condition of life and work in the settlement; if it is predominantly of utility service character and if it is carried out according to the principles of utility management. Utility activities that ensure the maintenance of utility infrastructure are the following: maintenance of non-classified roads, maintenance of public areas where traffic of motor vehicles is not allowed, maintenance of construction works for public drainage of precipitation, maintenance of public green areas, maintenance of construction works, facilities and construction works for public use, maintenance of cemeteries and crematoriums within cemeteries, maintenance of cleanliness of public surfaces and maintenance of public lighting. Building utility infrastructure can be ensured as a part of these activities. Service utility activities are: parking services on public surfaces and in public garages, public retail market services, services of burial and cremation of the deceased in crematoriums within cemeteries, utility lines for passenger transport and performance of chimney sweeping services. As part of the performance of these activities, the construction and/or maintenance of necessary utility infrastructure can also be ensured. Entities performing utility activities can be a company (the most common type, utility activity is performed by decision of a representative body on entrusting the performance of utility activities), a public institution[5] (a special legal entity founded by a local self-government unit) and an own facility (a local self-government unit established by the decision of a representative body, lacking the status of a legal entity). Both legal and natural persons can perform municipal services of providing parking services on public surfaces and in public garages, public retail market services, utility lines for passenger transport, performance of chimney sweeping services and maintaining public lighting. A local self-government unit can entrust the performance of municipal services that are financed exclusively from its budget to a legal or natural person on the basis of a written contract (agreement on the performance of utility activities). The representative body of the local self-government unit determines by decision the utility activities that can be performed on its territory on the basis of such a contract. The provision of municipal service activities is funded by the price of such services (the prices of municipal services are determined in such a way as to ensure the gradual cost redemption of building and maintaining utility infrastructure and performing utility activities, as well as being financially acceptable for the population); by the budget of the local self-government unit, by revenues determined by special laws and from other revenues. Citizens and taxpayers are entitled to efficient and quality service in exchange for the fees and taxes they pay to the local and central government. The quality of municipal services has a great effect on the overall quality of life in a particular community and service providers should strive to improve. According to the Public Utilities Act, companies that provide municipal services are obliged to ensure permanent and quality provision of municipal services, maintain utility facilities and equipment in good working order, perform municipal services in accordance with the principles of sustainable development and ensure the

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[3] Utility services providers have to deliver utility services to users in a manner that cannot harm their property, rights, and legal interests.

[4] Utility services providers are obliged to ensure transparency of their work to the public and to provide utility service users access to information that are important for the delivery of utility services and their participation in the decision-making process in utility management.

[5] The utility service provider can only perform utility activities for which it was founded and cannot simultaneously perform other economic activities on the market.

transparency of their work to the public. Improvement can be achieved by using methods of analysis resulting in measurable results and solutions for efficiency improvement. One of the methods beneficial in providing extensive and detailed results is Data Envelopment Analysis (DEA) [7] [20]. The method uses multiple inputs and one output as well as a non-controllable input-oriented model with variable returns to scale. DEA is used to empirically measure productive efficiency of decision-making units (DMUs). DEA is a powerful service management and benchmarking technique. DEA methodology has been used in theoretical development of numerous studies as well as measuring the relative efficiency of different social activities and industries, including retailing, banking, and energy sector. DEA has also been used for measuring efficiency of providing public services such as education, health care, municipal services and other types of services, or to assess the relative efficiency of national economies. What followed is a large number of studies that evaluated the relative efficiency of municipal services. These studies usually analyse a small number of variables in an empirical model, and the relative efficiency measurement is not comprehensive. However, they show the real state of the subject on the market in comparison to others in the industry, and offer an opportunity for improving usage projections and unit functioning. The most commonly used models are CCR model [5] and BCC model [3].

2. RESEARCH
2.1. Data Envelopment Analysis
The CCR model [5] was chosen for this research. The model was first presented by Charnes, Cooper and Rhodes in 1978, in an article published in the European Journal of Operational Research, vol. 2, no. 6, p. 429–444, and is therefore named after the authors' initials.
The CCR model calculates the total efficiency for each decision making unit (DMU), which includes pure technical efficiency and efficiency as dependent on the volume of business whereby technical efficiency and efficiency measures are combined into one value. In the model, each unit's DMU is to be maximized in such a way that each variable of the selected indicators is assigned with the most suitable weighting coefficient. Virtual inputs and outputs are obtained by assigning the most favourable weighting coefficients to each variable [5]

Virtual input $= v_1 x_{10} + \cdots + v_m x_{m0}$
Virtual output $= u_1 y_{10} + \cdots + u_m y_{m0}$

It is necessary to find non-negative weighting coefficients using linear programming to maximize the ratio of virtual output/virtual input, with the restriction that they cannot be greater than one for each observed DMU. The authors Charns, Cooper and Rhodes proposed a model for the optimization of each DMU which can be expressed as:

$$Max\ h_k = \sum_{r=1}^{s} u_r y_{rk} \Bigg/ \sum_{i=1}^{m} v_i x_{ik}$$

(1)

Subject to:

$$\sum_{r=1}^{s} u_r y_{rj} \Bigg/ \sum_{i=1}^{m} v_i x_{ij} \leq 1$$

(2)

$$j = 1, \dots, n$$
$$u_r, v_i \geq 0, \qquad r = 1, \dots, s, i = 1, \dots, m$$

(3)

wherein:
- h_k relative efficiency k-DMU
- k number of DMU
- m number of inputs (x)
- n number of outputs (y)
- v input weight (x)
- u output weight (y)

k-DMU efficiency maximization (1-3) is requested with the condition that the weighted output sum is smaller than the weighted input sum (2), followed by $0 < h_k \leq 1$. If the function equals $h_k = 1$ then k-DO is relatively efficient, and if $h_k < 1$ then k-DMU is relatively inefficient. The value itself represents the extent of necessary rationalization of resource consumption or results' increase in order to achieve k-DMU efficiency. DMU unit can be valued as efficient if no other unit from the k-set with its optimal weighting coefficients can achieve a higher output value for a given input and such units define the efficiency limit.

2.2. Previous research

The only similar research for Croatia was carried out by Šegota, Cerović and Maradin in the paper ″Efficiency of municipal service providers in the Republic of Croatia″ [21], for municipal services dealing with refuse collection. The sample included 20 municipal services with the following inputs: total assets, material cost, cost of employees and population size. The output was EBITDA (earnings before interest, taxes, depreciation and amortization). Several Data Envelopment Analysis models were used, as follows: CCR model, Input-oriented CCR model with non-controllable and controllable inputs, BCC model, Input-oriented BCC model with non-controllable and controllable inputs. 8 DMUs were relatively effective, minimum efficiency was 30.4%, while the relative efficiency of 6 DMUs was below 50%. In Europe, similar researches using Data Envelopment Analysis were done by the authors Halkos and Petrou (2019) [11], and Pais-Magalhães Moutinho and·Marque (2021) [17]. Spanish municipal refuse collection services were studied by Bosch, Pedraja and Suárez-Pandiello (2000) [4], and López-Pérez, Garrido-Montañés and Zafra-Gómez (2023) [13]. Garofalo, Castellano, Agovino, Punzo, G. and Musella (2019) measured the territorial-divide analysis of separate waste collection in Italy [10], while Marques and Simões (2009) wrote about incentive regulation and performance measurement of the Portuguese solid waste management services [14]. Worthington and Dollery (2001) measured the efficiency of New South Wales municipalities [22]. A comparative policy analysis between the Swiss and Canadian systems has been done by Ali and Shirazi (2022) [2]. Chen, Song and Xu (2015) [6], and Yang, Fu, Liu and Cheng (2018) [23] calculated the efficiency of municipal services in China. Llanquileo-Melgare and Molinos-Senante (2021) evaluated the economies of scale in eco-efficiency of municipal waste management in Chile [12]. New models of Data Envelopment Analysis of municipal services of refuse collection have been authored by Albores, Petridis and Dey (2016) [1], Nyhan and Martin (1999) [16], Rogge and De Jaeger, (2012) [18], and Sarra, Mazzocchitti and Rapposelli (2017) [19].

2.3. Municipal services

For the purpose of this paper 26 municipal services providing refuse collection were selected. Municipal services are geographically dispersed across the territory of the Republic of Croatia. Their shared characteristics are smaller earnings and positive business performance. The following inputs have been selected - fixed and current assets, cost of employees, material cost, other costs and amortization. Fixed assets are intangible and tangible assets, long-term tangible assets, long-term accounts receivable and deferred tax assets.

Current assets are inventories, short-term accounts receivable, short-term financial assets and cash at bank and in hand. Cost of employees include net salaries and wages, income tax and contribution expenses and contributions. Material costs are costs of raw materials and consumables, costs of goods sold and other external costs. The selected inputs include almost all factors that affect the overall business. All inputs are controllable, providing the management with a clearer picture and guidelines for subsequent business improvement. The chosen output is earnings (total revenues and expenditures, and corporation tax). Although EBITDA (earnings before interest, taxes, depreciation and amortization) is often used as an output in such research, in this case earnings were chosen as the output, considering that amortization and other payments/deductions are different in these MSs, so the final results can be somewhat different. Table 1 shows all MS with data, i.e. all input and output values.

DMU	Fixed assets	Current assets	Cost of employees	Material cost	Other cost	Amorti-zation	Earnings
BOŠANA d.o.o. Biograd Na Moru	3845362	6336858	6520792	4627917	808557	1544740	254492
ČISTI OTOK d.o.o. Vir	3964850	3712955	3895281	3197752	1128268	2267871	179080
Čistoća d.o.o. Zadar	17226881	24386665	38469292	18788659	9147931	6335644	840188
ČISTOĆA PAG D.O.O.	10033232	1455635	3953068	1753527	536342	1833478	90030
EKO MOSLAVINA d.o.o Kutina	34913997	4670405	5789766	4145850	1749110	3231161	1234383
GACKA d.o.o. Otočac	9836198	5043479	5134016	4358441	1318696	2195502	480186
KOMUNALAC d.o.o. Bjelovar	31917984	12897247	10795388	7653836	4509822	2353104	993478
KOMUNALAC d.o.o. Koprivnica	1.76E+08	53704076	31059187	1.14E+08	10863168	7304885	2579600
KOMUNALAC Požega do.o.	20925341	13799341	12488355	6484406	2314110	3628440	2107485
KOMUNALNE USLUGE ĐURĐEVAC D.O.O.	10585539	6400090	4630533	3495285	1132640	1112022	496395
KOMUNALNI SERVIS d.o.o. Rovinj	47615031	10818480	15890123	20487674	3621466	7539607	970774
KOMUNALNO DRUŠTVO GRAD d.o.o. Supetar	1241516	2262007	6067838	2712258	1116849	929764	197435
KOMUNALNO PODUZEĆE d.o.o. Cubinec	22194003	9557253	12742733	17703897	2586013	2768899	1538987
LEĆ d.o.o. Vodice	3834881	8201510	8073337	5043700	1410241	1489381	929461
LOPAR VRUTAK d.o.o.	3025308	2831026	2820082	2305992	463778	596309	441018
MED EKO SERVIS d.o.o. Pomer	13028190	1343242	5685564	7572377	1282764	1591582	659989
MURTELA d.o.o. Murter	1458794	2206163	2404267	2141830	446499	590132	396343
NOVOKOM d.o.o. Novska	10712568	3785523	5709803	5358120	1764794	3066827	284431
PARK d.o.o. Buzet	16107908	4001508	3716226	3188693	1613744	1902234	188139
USLUGA D.O.O. Pazin	19662031	8957811	7246233	8078848	1273535	1879481	408006
USLUGA POREČ d.o.o.	80134200	31623611	19294994	24422464	6363891	13894924	1003739
ZELENO I MODRO d.o.o. Kaštel Štafilić	8023287	7127427	7404680	10724125	1683243	2978559	286914
ZELENJAK d.o.o. Klanjec	24716551	4128735	1996840	1259749	263013	2798499	383311
Komunalac d.o.o. Vukovar	26851497	14095796	20175459	19047020	2847657	4784182	554481
ČISTOĆA I ZELENILO, Knin	4436010	4416384	3835174	1822655	357061	681934	258491
STAMBENO KOMUNALNO GOSPODARSTVO d.o.o. Ogulin	5257427	3583338	4639079	2282274	1379928	859626	153171

Table 1: Municipal services with input and output values in 2021 (source: FINA [8] [9])

	Minimum	Maximum	Mean	Standard Derivation	Coefficient of variation
fixed assets	1241516	176400949	23382674.4	34970924.7	1.495591313
current assets	1343242	53704076	9667175.6	11188982	1.15741996
cost of employees	1996840	38469292	9632235	8761068.2	0.909557148
material cost	1259749	113996770	11640543	21510906.2	1.847929792
other cost	263013	10863168	2383966.2	2586192.4	1.084827629
amortization	590132	13894924	3083030.3	2867014	0.929933773
earnings	90030	2579600	688846.4	603684	0.876369536

Table 2: Descriptive statistics of inputs and output (Source: authors)

The table above contains descriptive statistics demonstrating the smallest dispersion for earnings, which could be analysed further. As municipal services are of public interest their primary goal is financial stability, not profit.

	Fixed assets	Current assets	Cost of employees	Material cost	Other cost	Amorti-zation	Earnings
fixed assets	1	0.9076	0.62	0.9398	0.7895	0.6704	0.7288
current assets	0.9076	1	0.8341	0.9035	0.9035	0.7382	0.73
cost of employees	0.62	0.8341	1	0.6822	0.931	0.6928	0.5942
material cost	0.9398	0.9035	0.6822	1	0.8034	0.5237	0.7037
other cost	0.7895	0.9035	0.931	0.8034	1	0.7268	0.6556
amortization	0.6704	0.7382	0.6928	0.5237	0.7268	1	0.4671
ebidta	0.7288	0.73	0.5942	0.7037	0.6556	0.4671	1

Table 3: Pearson correlation coefficient of inputs and output (Source: authors)

The table displays the Pearson correlation coefficient. We notice that all correlations are positive, and that earnings have the least correlations with inputs, indicating why these particular inputs and outputs were chosen.

2.4. Empirical results

Research results are represented, that is, the relative efficiency of all DMUs. We can conclude that 6 of them are efficient, given that $h_k = 1$, while others with $h_k < 1$ are relatively inefficient.

Table following on the next page

DMU	Efficiency
EKO MOSLAVINA d.o.o Kutina	1
KOMUNALAC Požega do.o.	1
LOPAR VRUTAK d.o.o.	1
MED EKO SERVIS d.o.o. Pomer	1
MURTELA d.o.o. Murter	1
ZELENJAK d.o.o. Klanjec	1
LEĆ d.o.o. Vodice	0.973
KOMUNALNO PODUZEĆE d.o.o. Cubinec	0.86
ČISTOĆA I ZELENILO, Knin	0.735
KOMUNALNE USLUGE ĐURĐEVAC D.O.O.	0.663
KOMUNALAC d.o.o. Bjelovar	0.61
KOMUNALNO DRUŠTVO GRAD d.o.o. Supetar	0.585
GACKA d.o.o. Otočac	0.53
KOMUNALAC d.o.o. Koprivnica	0.512
KOMUNALNI SERVIS d.o.o. Rovinj	0.373
USLUGA D.O.O. Pazin	0.345
BOŠANA d.o.o. Biograd Na Moru	0.343
NOVOKOM d.o.o. Novska	0.332
STAMBENO KOMUNALNO GOSPODARSTVO d.o.o. Ogulin	0.276
ČISTI OTOK d.o.o. Vir	0.274
USLUGA POREČ d.o.o.	0.265
PARK d.o.o. Buzet	0.256
ČISTOĆA PAG D.O.O.	0.238
ZELENO I MODRO d.o.o. Kaštel Štafilić	0.229
ČISTOĆA d.o.o. Zadar	0.226
KOMUNALAC d.o.o. Vukovar	0.219

Table 4: Relative efficieny of municipal services in 2021 (Source: authors)

Relatively inefficient 8 DMUs have above 50% efficiency, 12 have less than 50%, with the lowest 21.9%. Mean is 0.57 and dispersion 53.5% so we can conclude a medium dispersion.

	Minimum	Maximum	Mean	Standard Derivation	Coefficient of variation
Efficiency	0.219	1	0.57092308	0.305706738	0.53546047

Table 5: Descriptive statistics of relative efficiency (Source: authors)

	Fixed assets	Current assets	Cost of employees	Material cost	Other cost	Amorti-zation	Earnings
Efficiency	-0.10391	-0.21282	-0.31038	-0.142	-0.28928	-0.33973	0.318776

Table 6: Pearson correlation coefficient of relative efficiency and inputs and output (Source: authors)

Table 6 contains the calculation of Pearson correlation coefficient for relative efficiency, inputs and output. It is evident that all the coefficients are relatively small, leading to the conclusion that relative efficiency is not related to any of the inputs or outputs, but to the combination itself.

	fixed assets	current assets	cost of employees	material cost	other cost	Amorti- zation
BOŠANA d.o.o. Biograd na moru	3845362 to 1320462	6336858 to 1519546	6520792 to 1583417	4627917 to 1354122	808557 to 277651	1544740 to 362407
ČISTI OTOK d.o.o. vir	3964850 to 1087775	3712955 to 1009226	3895281 to 1068688	3197752 to 877318	1128268 to 203702	2267871 to 284670
ČISTOĆA d.o.o. Zadar	17226881 to 3890444	24386665 to 4802086	38469292 to 5078754	18788659 to 4243149	9147931 to 942870	6335644 to 1280717
ČISTOĆA PAG d.o.o.	10033232 to 2383450	1455635 to 345794	3953068 to 441078	1753527 to 336740	536342 to 127411	1833478 to 228709
GACKA d.o.o. Otočac	9836198 to 5211750	5043479 to 2423293	5134016 to 2720279	4358441 to 2308584	1318696 to 581612	2195502 to 872977
KOMUNALAC d.o.o. Bjelovar	31917984 to 7570396	12897247 to 6409048	10795388 to 6237418	7653836 to 4665117	4509822 to 1056176	2353104 to 1434249
KOMUNALAC d.o.o. koprivnica	176400949 to 11879043	53704076 to 14998593	31059187 to 15894456	113996770 to 13808713	10863168 to 2849834	7304885 to 3738255
KOMUNALNE USLUGE ĐURĐEVAC d.o.o.	10585539 to 3465212	6400090 to 3106803	4630533 to 3072069	3495285 to 2318903	1132640 to 536972	1112022 to 737757
KOMUNALNI SERVIS d.o.o. Rovinj	47615031 to 17763941	10818480 to 4036096	15890123 to 5589316	20487674 to 5127578	3621466 to 1351075	7539607 to 2123063
KOMUNALNO DRUŠTVO GRAD d.o.o. Supetar	1241516 to 726686	2262007 to 1098981	6067838 to 1197665	2712258 to 1066934	1116849 to 222419	929764 to 293969
KOMUNALNO PODUZEĆE d.o.o. Cubinec	22194003 to 7235940	9557253 to 8220928	12742733 to 9585074	17703897 to 8910588	2586013 to 1813695	2768899 to 2381743
LEĆ d.o.o. Vodice	3834881 to 3731155	8201510 to 5222373	8073337 to 5631258	5043700 to 4907278	1410241 to 1045666	1489381 to 1395466
NOVOKOM d.o.o. Novska	10712568 to 3557493	3785523 to 1257119	5709803 to 1794936	5358120 to 1779356	1764794 to 388282	3066827 to 549995
PARK d.o.o. Buzet	16107908 to 4116892	4001508 to 799117	3716226 to 949800	3188693 to 732025	1613744 to 252371	1902234 to 437221
USLUGA d.o.o. Pazin	19662031 to 3614389	8957811 to 2656835	7246233 to 2498500	8078848 to 1632637	1273535 to 439114	1879481 to 648044
USLUGA Poreč d.o.o.	80134200 to 21218142	31623611 to 4317409	19294994 to 5108978	24422464 to 3967427	6363891 to 1337623	13894924 to 2298400
ZELENO I MODRO d.o.o. Kaštel Štafilić	8023287 to 1838455	7127427 to 1540356	7404680 to 1696707	10724125 to 1485433	1683243 to 332458	2978559 to 463091
KOMUNALAC d.o.o. VUKOVAR	26851497 to 2055342	14095796 to 3090296	20175459 to 3365049	19047020 to 2995605	2847657 to 624307	4784182 to 824966
ČISTOĆA I ZELENILO, Knin	4436010 to 3243917	4416384 to 1770407	3835174 to 1622670	1822655 to 1302021	357061 to 262503	681934 to 501343
STAMBENO KOMUNALNO GOSPODARSTVO d.o.o. Ogulin	5257427 to 1279581	3583338 to 989177	4639079 to 940366	2282274 to 630019	1379928 to 165162	859626 to 237299

Table 7: The projection of relatively inefficient municipal services in 2021 (Source: authors)

The table above demonstrates the necessary improvement of inputs for each less efficient DMU in order to become as efficient as the efficient DMUs. It can be seen that there is no clear business improvement for the less effective DMUs, i.e. there is no specific input that would prevail over others. According to these guidelines, any management of a less effective DMU can design business strategies in order to increase efficiency. For example, DMU Komunalac Bjelovar should reduce all fixed assets from 31917984 to 7570396, that is, reduce them by 76.3%, reduce current assets from 12897247 to 6409048, i.e. by 50.3%, reduce the cost of

employees from 10795388 to 6237418, i.e. by 42.2 %, material cost from 7653836 to 4665117, i.e. by 39%, other cost from 4509822 to 1056176, i.e. by 77%, or amortization from 2353104 to 1434249, i.e. by 39%.

3. CONCLUSION
The main role of municipal services is to support the life and work needs of citizens. Companies providing these types of services should strive for quality, not profit. There are several indicators of the quality of service, and this paper presents the financial efficiency. The efficiency of 26 municipal services from the Republic of Croatia dealing with refuse collection was calculated. Fixed assets, current assets, cost of employees, material cost, other cost and amortization were selected as inputs, while earnings were selected as output. Input dispersion is large, ranging from 91% to 185%, while output dispersion is 88%. This data is favorable for analysis, given that profit is not the primary goal of municipal services. By using Data Envelopment Analysis method, it was calculated that 6 of the municipal service providers are efficient, while the others are less efficient. The lowest is at 22% efficiency, while the mean is 57%, and the dispersion is 54%. We can conclude that there is a big difference in the efficiency of municipal services from the sample. The Pearson coefficient of correlation was calculated for the effectiveness of both inputs and outputs, and it can be seen that all these correlations are small. We can therefore conclude that no single input or output significantly affects efficiency by itself. Efficiency is affected by the combination of these inputs and outputs. By calculating the inputs which should be improved in a particular relation, the Data Envelopment Analysis method serves as a tool for the inefficient providers to become more efficient. Company management gains a better insight and creates guidelines for further improvement of work performance and increased efficiency. Although municipal services vary, this paper only compared municipal services that operate under similar conditions. The impact of a larger number of municipal services on the results is not noticeable, nor does the application of Data Envelopment Analysis show that such companies are relatively more efficient or inefficient compared to other companies that provide only waste collection services. To the knowledge of the authors of this paper, there was only one similar research conducted in the Republic of Croatia so future studies should include information on the operations of utility companies for a longer period and calculate relative efficiency results over time.

LITERATURE:
1. Albores, P., Petridis, K. and Dey P.K.(2016). *Analysing Efficiency of Waste to Energy Systems: Using Data Envelopment Analysis in Municipal Solid Waste Management*. Procedia Environmental Sciences Vol. 35 265-278
2. Ali, S. and Shirazi, F. (2022). *A Transformer-Based Machine Learning Approach for Sustainable E-Waste Management: A Comparative Policy Analysis between the Swiss and Canadian Systems*. Sustainability, 14, 13220
3. Banker, R. D., Charnes, A. and Cooper, W. W. (1984). *The Use of Categorical Variables in Dana Envelopment Analysis*. Management Science, 30, 1078– 1092.
4. Bosch, N., Pedraja, F., and Suárez-Pandiello, J. (2000). *Measuring the efciency of spanish municipal refuse collection services*. Local Government Studies, 26(3), 71–90.
5. Charnes, A., Cooper, W.W. and Rhodes, E., (1978). *Measuring the efficiency of decision making units*. Eur. J. Oper. Res. 2, 429–444.
6. Chen, J., Song, M. And Xu, L., (2015). *Evaluation of environmental efficiency in China using data envelopment analysis*. Ecol. Indic. 52, 577–583.
7. Cooper, W. W., Seiford, L. M. and Tone K. (2006). *Introduction to Data Envelopment Analysis and Its Uses*. New York: Springer

8. *Financial Agency* (FINA). *Croatian companies annual reports*. Retrieved 15.06.2023 from https://www.fina.hr/poslovne-informacije-i-financijski-izvjestaji
9. *Financial Agency* (FINA), *Croatian companies annual reports.* Retrieved 15.06.2023 from http://rgfi.fina.hr/IzvjestajiRGFI.web/main/home.jsp
10. Garofalo A., Castellano, R., Agovino, M., Punzo, G. and Musella, G. (2019). *How Far is Campania from the Best-Performing Region in Italy? A Territorial-Divide Analysis of Separate Waste Collection*. Social Indicators Research , Vol. 142, No. 2: 667-688
11. Halkos, G., and Petrou, K. N. (2019). *Assessing 28 EU member states' environmental efciency in national waste generation with DEA*. Journal of Cleaner Production, 208, 509–521.
12. Llanquileo-Melgare, P. and Molinos-Senante, M. (2021). *Evaluation of economies of scale in eco-efficiency of municipal waste management: an empirical approach for Chile*. Environmental Science and Pollution Research 28:28337–28348
13. López-Pérez, G., Garrido-Montañés, M. and Zafra-Gómez, E. *Cost Efficiency in Municipal Solid Waste (MSW): Different Alternatives in Service Delivery for Small and Medium Sized Spanish Local Governments*. Sustainability 2023, 15, 6198
14. Marques, R.C. and Simões, P. (2009). *Incentive regulation and performance measurement of the Portuguese solid waste management services*, Waste Management & Research 27: 188–196
15. Ministry of Physical Planning, Construction and State Assets. *Regulations in the field of utility management.* Retrieved 15.06.2023 from https://mpgi.gov.hr/access-to-information/regulations-126/regulations-in-the-field-of-utility-management-8643/8643
16. Nyhan, R.C. and Martin, L.L. (1999): *Assessing the Performance of Municipal Police Services Using Data Envelopment Analysis: An Exploratory Study*. State & Local Government Review Vol. 31, No. 1, 18-30
17. Pais-Magalhães, V., · Moutinho, V., and·Marques, A.C. (2021). *Scoring method of eco-efciency using the DEA approach: evidence from European waste sectors*. Environment, Development and Sustainability 23: 9726–9748
18. Rogge, N., and De Jaeger, S. (2012). *Evaluating the efciency of municipalities in collecting and processing municipal solid waste: A shared input DEA-model*. Waste Management, 32(10), 1968–1978
19. Sarra, A., Mazzocchitti, M., and Rapposelli, A. (2017). *Evaluating joint environmental and cost performance in municipal waste management systems through data envelopment analysis: Scale effects and policy implications*. Ecological Indicators, 73, 756-771
20. Sherman, H.D. and Zhu, J. *Data envelopment analysis explained. In Service Productivity Management: Improving Service Performance using Data Envelopment Analysis (DEA)*; Springer: Berlin/Heidelberg, Germany, 2006; pp. 49–89.
21. Šegota, A., Cerović, Lj. and Maradin, D. (2017). *Efficiency of municipal service providers in the Republic of Croatia.* Croatian Operational Research Review Vol.8 No. 2 537–562
22. Worthington A.C. and Dollery B.E. (2001). *Measuring Efficiency in Local Goverment: An Analysis of New South Wales Municipalities, Domestic Waste Menagement Function*. Policy Studies Journal, Vol 29, No 2, 232-249
23. Yang, Q., Fu, L., Liu, X., and Cheng, M. (2018). *Evaluating the efciency of municipal solid waste management in China*. International Journal of Environmental Research and Public Health, 15(11), 2448.
24. Zakon o komunalnom gospodarstvu. NN 68/18, 110/18, 32/20.

HOW TO SOLVE CONFLICT SITUATIONS BETTER WITH THE MODEL OF THOMAS AND KILMANN

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ABSTRACT

Conflict management is essential to modern management, particularly in light of the Covid-19 pandemic and global crises like inflation and war. Conflict arises when the interests of different parties are not aligned, but it can be a catalyst for new perspectives and solutions. While conflicts are natural within organizations, they can hinder productivity and job satisfaction. Constructive conflict management, which emphasizes collaboration and minimizing conflict avoidance, is crucial for enhancing productivity. Thomas and Kilmann propose a model that identifies five conflict-handling modes: competing, collaborating, compromising, avoiding, and accommodating. This model shares similarities with Blake and Mouton's framework, which also outlines five modes for managing conflicts. However, Thomas and Kilmann's model distinguishes itself by incorporating two key dimensions—assertiveness and cooperation - and categorizing conflict-handling styles accordingly. The collaborating style is regarded as the most effective approach. By employing effective conflict management strategies, organizations can navigate conflicts successfully and promote employee productivity and satisfaction. The primary objective of this research is to simulate a conflict situation in which participants are tasked with resolving the conflict. Prior to the simulation, participants, primarily consisting of students, complete a questionnaire. The study then compares the questionnaire results with the actual behaviors and assumptions observed during a specialized decision-making business game.
Keywords: Conflict management, Conflict handling style, Business decision simulation game

1. INTRODUCTION

The main focus of the paper that simulates a conflict situation and examines it with confirmative research on conflict handling behavior with the conflict management model of Thomas and Kilmann. (Thomas & Kilmann, 1974) For the simulation of a conflict management situation, the paper uses a special decision-making game that was developed by Kispál-Vitai and which is good to observe personal behavior in a course of conflict situation. (Kispál-Vitai, 2013a) During the research, all the participants first filled out a conflict management questionnaire which was based on the Thomas and Killmann questionnaire this was compared with the real behavior in a real conflict situation during the decision-making game which modeled a real conflict situation. This management game is a universal game that is good to examine the decision-making processes and the state of power and in this case, the author uses it to study and analyze conflict situations.1 The first and second chapters of the article describe the most important theoretical background of the study. The third chapter deals with the results of the empirical research. The study included a total of 286 participants who completed the modified conflict management questionnaire and took part in the conflict management simulation between 2018 and 2023.

In the initial phase of the research in 2018, 50 participants participated solely in the conflict management game. Among the participants, there were 13 individuals from the Hungarian division of a multinational company who completed only the conflict management questionnaire. The remaining participants consisted of students from Hungary, the Czech Republic, the United States, and various international students from around the world. The most significant finding of this research is that participants' behavior in real conflict situations may differ from what the questionnaire results indicated. The last chapter focuses on the summary of the article.

2. THEORETICAL INTRODUCTION OF THE RESEARCH

Conflict management has emerged as a crucial area of focus in contemporary management, particularly in the wake of the Covid Pandemic crisis, as well as amidst global inflationary and war crises. According to Martin and Fellenz (2017, p. 251), conflict is a natural occurrence in social situations and encompasses circumstances where the interests of different parties are not aligned. Although traditionally viewed as negative, conflicts can actually yield fresh perspectives, resources, and solutions (Martin and Fellenz, 2017). Conflict, as noted by Kay and Skarlicki (2020), is an inevitable aspect within organizations (Kay and Skarlicki, 2020). Jehn (1995) defines conflict as a perceived incompatibility among two or more parties, resulting in reduced work productivity and diminished job satisfaction (Jehn, 1995). According to Bakacsi, "... we talk about conflict when one of two or more interdependent parties perceives that the others have a negative attitude towards something that is important to them" (Bakacsi, 2015). Hence, companies and organizations must adopt constructive conflict management approaches to enhance productivity. Constructive conflict management emphasizes collaboration and minimizes conflict avoidance (Kay and Skarlicki, 2020). According to Thomas and Kilmann (1974), the collaborating style is the most effective solution for handling conflicts. They identified five modes for managing interpersonal conflicts: competing, collaborating, compromising, avoiding, and accommodating (Riashi and Asadzadeh, 2015), which aligns with the framework proposed by Blake and Mouton (1964). Blake and Mouton identified five essential modes for addressing interpersonal conflicts: forcing, withdrawing, smoothing, compromising, and problem-solving (Blake and Mouton, 1964). Though these two models share similarities, an important distinction lies in Thomas and Kilmann's inclusion of two vital dimensions: assertiveness and cooperation, underpinning their categorization of conflict-handling styles (Thomas, 1976; Riashi and Asadzadeh, 2015). Figure 1 provides a visual representation of the Thomas and Kilmann model's conceptual scheme for conflict-handling styles.
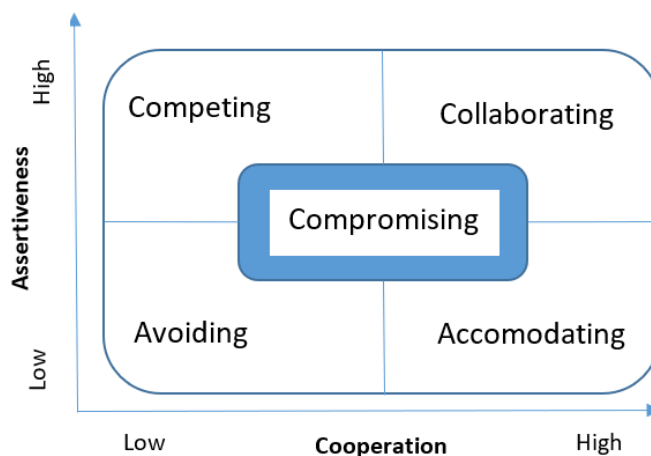
Figure 1: Conflict handling styles according to Thomas and Kilmann
(Source: Riashi and Asadzadeh 2015, 613 p.)

Thomas and Kilmann utilized the Thomas Kilmann (Conflict Mode) Instrument (TKI) questionnaire to measure conflict styles (Kilmann Diagnostics, 2020). The competing style entails an uncooperative and assertive behavior where individuals assert their own perspective as correct. On the other hand, the accommodating style involves unassertive yet highly cooperative behavior, where one disregards their own concerns to satisfy the interests of other parties. The avoiding style combines both uncooperativeness and unassertiveness, with little regard for both their own and the other party's interests. Compromising represents an intermediate approach to conflicts, where individuals may gain or lose something simultaneously. It is a short-term solution that may give rise to further conflicts. According to Thomas and Kilmann, the most effective solution is collaboration, characterized by a cooperative and assertive approach. Collaboration offers a long-term solution and allows both parties to learn from each other (Kispál - Vitai, 2013). In the course of a conflict, goal orientation also plays a crucial role. Zarankin (2008) suggests that goal orientation tends to be more stable during conflict situations, whereas conflict styles exhibit relative volatility (Zarankin, 2008). A major gap in the conflict types literature lies in the varying perspectives on the stability of conflict management styles. While some authors view conflict management styles as relatively stable, akin to personality traits, others believe that conflicts are influenced by contextual factors unique to each situation. Zarankin proposes focusing on the goal orientation and hidden motivational factors of individuals (Zarankin, 2008). These personal motivations are contingent upon one's position within the company and the positions of the involved parties (Brewer et al., 2002). Another significant gap in the literature pertains to the conflict resolution process. Many studies primarily focus on conflict management styles and negotiation, often neglecting to describe the resolution process and potential resolution preferences. However, resolution preferences are closely linked to conflict management styles (Zarankin, 2008). Figure 2 illustrates these two gaps in the conflict literature.
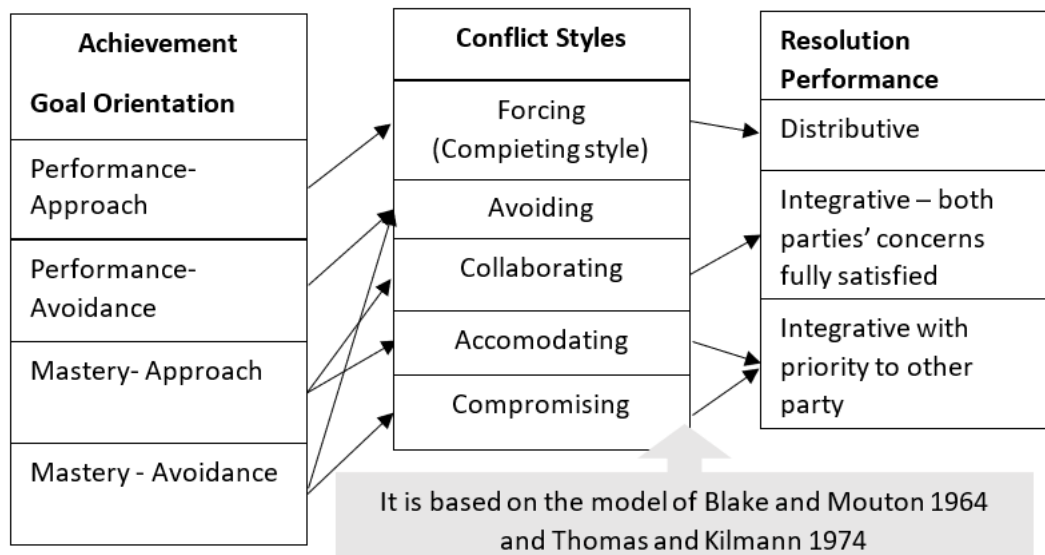
Figure 2: A model for the antecedents of conflict styles and the preferred outcomes associated with conflict styles (Source: it is based on Zarankin 2008, 169. p.)

According to Zarankin (2008), the model demonstrates a positive correlation between motivational factors such as achievement goals and conflict styles. In this model, goal orientation is linked to conflict styles and influences the effectiveness of conflict resolution (Zarankin, 2008).

The collaborating style, which satisfies the concerns of both parties, is considered the optimal solution and is also recommended by Thomas and Kilmann. The accommodating and compromising styles prioritize the interests of the other party. Some researchers argue that conflict management styles closely resemble personality types within the "Big Five" model, which includes openness, conscientiousness, extraversion, agreeableness, and neuroticism (Friedman et al., 2000; Moberg, 2001; Shell, 2001; in: Zarankin, 2008). Espinoza et al. (2023) found in their research that personality factors are better predictors of conflict management styles. Furthermore, personal hierarchical status within a company influences the choice of conflict styles. Individuals with higher status are more likely to use interactive styles, while those with lower status tend to prefer avoiding and accommodating styles (Brewer et al., 2002; in: Zarankin, 2008). Elsayed (1996) suggests that cultural differences and dimensions play a role in determining how conflicts are handled. Individuals from collectivist and hierarchical societies predominantly utilize integrating and avoiding styles, while those from individualistic societies are more inclined to employ obliging (such as accommodating style), compromising, and dominating competing styles (Elsayed, 1996). Moreover, conflict-handling styles exhibit age-related variations, highlighting the importance of modifying the TKI questionnaire to include age-related inquiries. Brahnam and Chin (2005) propose that the TKI questionnaire should also consider gender differences, which have become increasingly significant in contemporary times. The Covid Pandemic crisis has further emphasized the relevance and applicability of the TKI questionnaire (Laporta, 2020). Additionally, Shonk (2021) states that individuals employ different conflict resolution techniques based on innate tendencies, personal experiences, and the demands of the situation.

2.1. Conflict management style and perceived stress and the Role of emotional intelligence

Numerous articles address the relationship between stress and conflict management, focusing on how employing appropriate conflict management styles can reduce stress levels. Effective conflict management approaches contribute to a harmonious work environment and lower turnover rates (Rahim, 1983). For example, emergency nurses who avoided conflicts with doctors experienced higher levels of stress compared to those who utilized other conflict-handling styles. Cooperative and collaborative styles were associated with lower stress levels. Additionally, studies have found that the integrating and dominating styles from the Blake and Mouton model were less stressful than the avoiding and obliging styles. The competing style was found to be stressful for the losing party but not for the winner. Perceived stress levels are influenced by the conflict management style used, the status and position of the other party, organizational factors, and individual characteristics (Michinov, 2022). Emotional intelligence also plays a significant role in conflict resolution. The understanding of emotional intelligence encompasses four essential dimensions: self-evaluation of emotions, evaluation of others' emotions, regulation of one's own emotions, and using emotions to enhance performance (Mayer & Salovey, 1990). Goleman (1995) posits that individuals with higher levels of emotional intelligence employ effective conflict-resolution strategies. There exists a relationship between the utilization of conflict management styles and personal emotional intelligence. Individuals with higher levels of emotional intelligence tend to utilize accommodating, collaborating, and collaborating styles, whereas those with lower levels of emotional intelligence tend to rely on avoiding and competing styles (Michinov, 2022). Jordan & Troth (2004) argue that individuals who can effectively manage others' emotions are better equipped to find alternative solutions and make fewer mistakes. Another perspective on emotional intelligence suggests that it can reduce perceived stress levels and is associated with lower frequencies of burnout.

Emotional intelligence plays a crucial role in conflict management as "…EI is significantly associated with CMS, with the integrating style mediating the relationship between EI and performance…" (Michinov, 2022, p. 449; Chen et al., 2015). In summary, conflict management situations can induce stress in the parties involved and have a significant impact on work performance. Moreover, personal emotional intelligence strongly influences the handling of conflicts.

3. SIMULATING AND INTERPRETING A CONFLICT SITUATION

After exploring conflict management theories, it is crucial to discuss how conflict management situations can be modeled. Games can serve as valuable tools for understanding and practicing conflict situations and their management. These games can take the form of competitive tasks that allow individuals to apply their negotiation and conflict management skills. This topic intersects with game theory, which involves modeling strategic situations where individual outcomes depend on the actions chosen by others. Games not only provide a framework for the formal analysis of conflicts but also offer powerful research tools for elucidating the key elements of conflict, examining participants' beliefs and behaviors, assessing the impact of system changes, and facilitating productive discussions among stakeholders (Redpath et al., 2018, p. 415). The simulation and examination of conflict management behavior Arias-Aranda & Bustinza-Sánchez used an example of a car manufacturing company for testing the student's entrepreneurial attitude, the main focus was to teach the students how can they handle conflict situations. (Arias-Aranda & Bustinza-Sánchez 2009) The authors used the previously presented model by Thomas and Kilmann and they used the conflict management styles from the model. There were 427 participants in the research who were students. The result of the study is that the students who were belong original to the group are more likely collaborated with each other to find some collaborative solutions. Those students who did not belong originally to the tested group are not collaborated and compromised more with the other students. Another important result of the research is that the experience of the simulation in the case of the students increased the tendency of group cohesion during the conflict management game. The students' number of accommodating and competing behaviors was high during the simulation game. The lesson of the simulation is that students collected more experience about their conflict resolution behavior (the five styles according to Thomas and Kilmann) during a real conflict situation and those students who had no experience had more likely extreme behavior like avoiding and competing style (Arias-Aranda & Bustinza-Sánchez 2009). The main research focus of the paper is to observe the conflict management behavior of Hungarian and foreign business students in higher education institutions from 2018 until 2023. The participants were Hungarian and international students from all over the world and the members of a regional department by a Hungarian division of a multinational telecommunication company (N=13). The size sample contains this participant who filled out the modified conflict management questionnaire and take part in a special decision-making business game (N=286). In the first part of the research in 2018, the students take part only in the conflict management simulation game, but they have not completed the questionnaire (N=50). The second part of the research is from 2019 until 2023 where the participants completed there the questionnaire and take part in the simulation game (N=286). The member of the Hungarian division of the multinational telecommunication company (N=13) completed the questionnaire and played the game but the result of the game is not public. The genders in the sample were eventually distributed, the youngest participant was 18 and the oldest was 48; 143 participants of the research were Hungarian, and 206 were international outside Hungary. The questionnaire was anonim and the research is not representative. The third figure represents the distribution of all individuals who participated in the research.
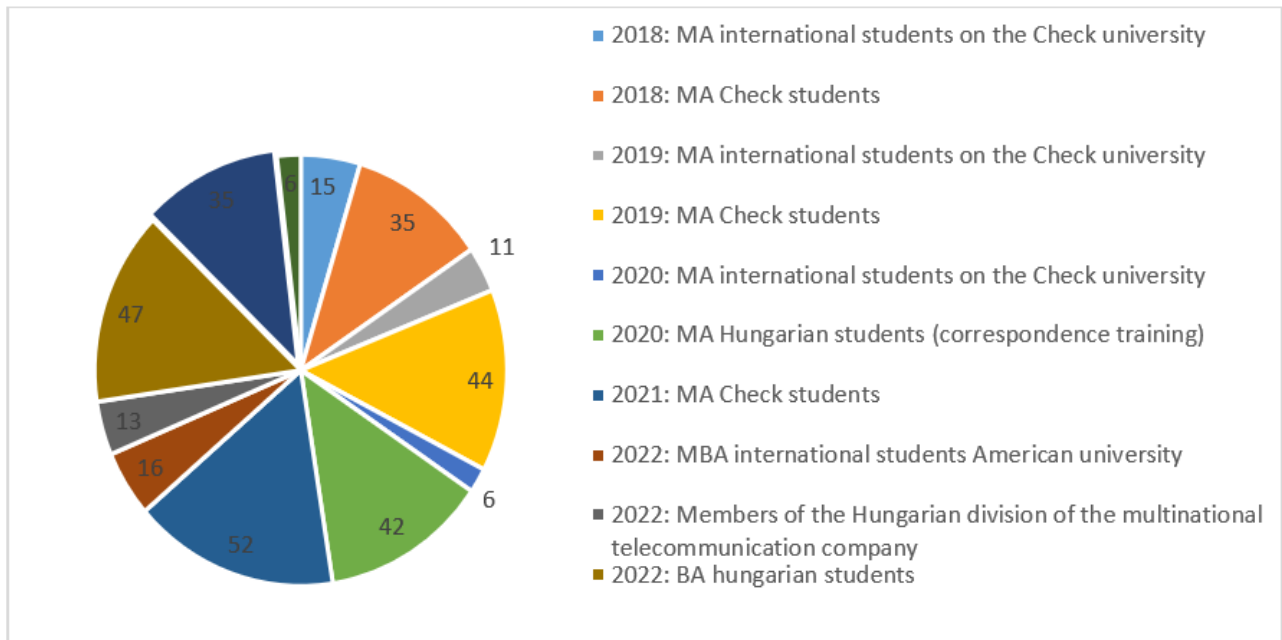
Figure 3: The distribution of research participants is a total of 349 people
(Source: it is based on the own research)

The research participants filled out the modified conflict management questionnaire individually in small groups and took part in simulating the conflict situation during the decision game. An important characteristic of the game is that the members of each group worked in four smaller groups, and during the decision-making game, each group jointly received the most important information regarding the task. The task was essentially to "get as many points as possible with the help of decisions" (Kispál-Vitai, 2013a, p. 1.), however, the instructions of the task did not clearly state that the four participating groups must cooperate or compete with each other. Before filling out the conflict management questionnaires and starting the game, each group gets to know Thomas and Kilmann's conflict management styles and the related methodology. (Thomas & Kilmann, 1974) In essence, the members of the groups interpret and carry out the task depending on their own understanding of conflict management, the groups make decisions independently in each decision-making circle, but they have the option of agreeing to cooperate with the other groups. Those individuals or groups who prefer a competitive behavior will compete with other teams, and those who prefer cooperation and collaboration will adopt this behavior towards other teams. A result of the game is whether the parties can trust each other and abide by the decisions made together, as well as whether they take into account what was formulated by Thomas and Kilmann, according to which, in the long run, cooperative behavior will be the most rewarding and the biggest yielding results (Thomas & Kilmann, 1974). All of this is also well illustrated by the results of the decision-making game, as ideally a maximum of 3,600 points can be obtained (this means the points collected jointly by all four groups), of course, if the participants collaborate in each decision-making round of the game, otherwise, i.e. in the case of compromising, accommodating, or avoiding behavior, all the points collected by the groups decrease. In the event that each group adopts a competitive attitude during the entire game, the fewest points can be earned, i.e. a total of -3600 points. During the research, the game was conducted in a total of 18 groups in the examined time interval between 2018-2023, which is illustrated in figure 4.

Figure 4: The results of the business game in the small groups (N=349)
(Source: it is based on the own research)

As you can see in the figure above, the closest to the purely competitive behavior were the international master's students of the Czech university in 2021, in contrast, the Czech master's students achieved the most points in 2019, which was 3000, which is the closest to the cooperative behavior for a maximum score of 3600. When filling out the questionnaire, an important result for the examined sample - of course taking into account the results of the small groups separately - (N=299) is that only an average of 3-5% of the respondents consider themselves to be competitors based on their answers, the vast majority of respondents think so about themselves as compromise-seeking, collaborative, or accommodative, a small number of respondents feel conflict-avoidant. Here, the emphasis is on the fact that, based on the questionnaire and the individual self-declaration, few participants think of themselves as competitors, but the results of the simulation game (N=336) suggest that in the case of each decision round, either the entire group or the group at least 80 -90% adopt a competitive attitude. Based on all of this, it can be concluded that the development of self-awareness and the acquisition of effective conflict management styles may be essential for the research participants. During the simulation of the conflict situation, the participating parties strive to achieve their own goal instead of taking into account the common goal, because the criteria of common goals and effective conflict management emphasize collaboration, but at the same time, this is given little emphasis during the game. Comparing the experiences of the literature research and the practical analysis, an additional important lesson can be that efforts should be made to develop the emotional intelligence of the participants because according to the lesson

of the literature chapter, individuals with a lower level of emotional intelligence are more inclined to enter certain competitive situations. A lack of emotional intelligence can also affect burnout, work efficiency, and the amount of perceived stress.

4. CONCLUSION

Taking into account the results of the research, it can be said that the teaching of conflict management styles in a playful environment plays an important role, with the help of which the benefits of long-term collaboration and its effect on the achieved result become clear to the students. The business decision simulation developed by Kispál-Vitai makes this clear, and through the points that can be obtained, it conveys and supports what was formulated by Thomas and Kilmann, according to which the collaborative conflict management style is the most effective. As a result of the simulation game, it can be said that a significant part of the participating students admitted that an extremely competitive behavior can be less effective than cooperation within an organization. From the point of view of the research, it is important to emphasize that with the present data, it is clearly not possible to make conclusions about conflict management regarding the Covid pandemic situation, this can provide a good topic for future analytical works. An important lesson can be that, although it takes time to develop collaboration, it can lead to greater results, reduce perceived stress, increase job satisfaction, and lead to greater emotional intelligence. It is certain that strong conflict situations lead to stress for the individual, supporting the findings of the literature, however, the level and extent of stress that the individual conflict management behaviors result in is not measured by the present research, it is certain that in the long term, collaboration can ensure the least amount of stress. Another result can be considered that the modified conflict management questionnaire based on Thomas and Kilmann does not reflect the real behavior of the individual in a given conflict situation well, this supports the finding in the literature that the behavior of the individual in a conflict situation depends on both his own characteristics and environmental factors. An additional research direction, which is not possible due to the limitations of the present article, is the analysis of conflict management styles with regard to gender, age, nationality and form of education.

LITERATURE:

1. Arias-Aranda, D., Bustinza-Sánchez, O. (2009). Entrepreneurial attitude and conflict management through business simulations, Industrial Management & Data Systems 109(8) 1101-1117. p. 10.1108/02635570910991328
2. Bakacsi, Gy. (2015) A szervezeti magatartás alapjai, Semmelweis Kiadó: Budapest.
3. Blake, R. R. & Mouton, J. S. (1964). The managerial grid. Houston: Gulf Publishing.
4. Jehn, K. A. (1995). A multimethod examination of the benefits and detriments of in- intragroup conflict. Administrative Science Quarterly, (40): 256–282. o. https://doi.org/10.2307/2393638
5. Brahnam, S. & Chin, J. (2005). A gender – Based Categorization of Conflict Resolution, Journal of Management Development, (24)3, 197-208.

6. Brewer, N. & Mitchell, P. & Weber, N. (2002). Gender role organizational status and conflict management styles, The International Journal of Conflict Mamgetnent (13)1: 78-89. o.

7. Chen, Y. Q., Sun, H., Zhang, S. J. (2015). Emotional intelligence, conflict management styles, and innovation performance: an empirical study of Chinese employees. International Journal of Conflict Management, (26)4, 450-478. 10.1108/IJCMA-06-2014-0039

8. Espinoza, J. A. & O'Neil, T. A. & Donia, M. B. L. (2023). Big Five factor and facet personality determinants of conflict management styles, Personality and Individual Differences, (203): 1-6. o. https://doi.org/10.1016/j.paid.2022.112029

9. Friedman, R.A., Curall, S.C. and Tsai, J.C. (2000). What goes around comes around: the impact of personal conflict style on work conflict and stress, The International Journal of Conflict Management, (11)1, 32-55. o. https://doi.org/10.1108/eb022834

10. Golemann, D. (1995). Emotional Intelligence: Why it can matter more than IQ. New York: Bloomsbury

11. Jordan, P. J., Troth, A. C. (2004). Managing emotions during team problem solving: emotional intelligence and conflict resolution. Human Performance, (17)2, 195-218. https://doi.org/10.1207/s15327043hup1702_4

12. Kay, A.A., Skarlicki, Daniel P. (2020). Cultivating a conflict-positive workplace: How mindfulness facilitates constructive conflict management, Organizational Behavior and Human Decision Processes 159(Feb): 8–20. o. https://doi.org/10.1016/j.obhdp.2020.02.005

13. Kilmann Diagnostics (2020). Assessments https://kilmanndiagnostics.com/assessments/ 10.06.2020

14. Kispál-Vitai, Zs. (2013). Szervezeti viselkedés. Pearson: Harlow

15. Kispál-Vitai, Zs. (2013a). Organizational Behaviour Course: Red and Green Simulation Game, University of Pécs, Faculty of Business and Economics, Pécs

16. Laporta, C. M. C. (2020). Covid-19 World Disorder and Reflection for Conflict Management with the use of ODR, Downloaded: https://www.mediate.com/articles/ celentano-conflict-management-platforms.cfm 05.17.2021

17. Mayer, D. J., Salovey, P. (1990). Emotional Intelligence, Imagination, Cognition and Personality (9) 3, 185-211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG

18. Martin, J., Fellenz, M. (2017). Organizational Behaviour and Management, Fifth Edition, Hampshire: Cengage Learning

19. Michinov, E. (2022). The Moderating Role of Emotional Intelligence on The Relationship Between Conflict Management Styles and Burnout among Firefighters, Safety and Healthy at Work, 13, 448 -455. https://doi.org/10.1016/j.shaw.2022.07.001

20. Moberg, P. (2001). Linking conflict strategy to the five-factor model: theoretical and empirical foundations, International Journal of Conflict Management, 12 (1), 47-68. o. https://doi.org/10.1108

21. Rahim, M. A. (1983). A measure of styles of handling interpersonal conflict. Academy of Management Journal 26(2) 368-76.

22. Redpath, S. M., Keane, A., Andrén, H., Baynham-Herd, Z., Bunnefeld, N., Duthie, B. A., Frank, J., Garcia, C. A., Mansson, J., Nilsson, L., Pollard, C. R. J., Rakotanovario, S. O., Salk, F. C., Travers, H. (2018). Games as Tools to Address Conservation Conflicts, Trends in Ecology & Evolution 33(6) 415-426. p.

23. Riasi, A.,Asadzadeh, N. (2015). The relationship between principals' reward power and their conflict management styles based on Thomas–Kilmann conflict mode instrument, Management Science Letters 5(6): 611–618 DOI: 10.5267/j.msl.2015.4.004

24. Shell, R.G. (2001). Bargaining styles and negotiation: the Thomas-Kilmann Conflict Mode Instrument in negotiation training, Negotiation Journal, 17 (2), 155-74. o. https://doi.org/10.1111/j.1571-9979.2001.tb00233.x

25. Shonk, K. (2021). Conflict - Management Styles: Pitfalls and Best Practices, Program on Negotiation Harvard Law School Daily Blog. https://www.pon.harvard.edu/daily/conflict-resolution/conflict-management-styles-pitfalls-and-best-practices/ 20.03.2023

26. Thomas, K.W., Kilmann, R.H. (1974). Developing a Forced–Choice Measure of Conflict-Handling Behaviour: The Mode Instrument Mountain View, CA: CPP, Inc.

27. Thomas, K. W. (1976). Conflict and conflict management. Chapter 21, of M. Dunnette (Ed.), Handbook of industrial and organizational psychology. Chicago: Rand-McNally, 889-935. o.

28. Zarankin, T. G. (2008). A new look at conflict styles: goal orientation and outcome performances. International Journal of Conflict Management 19 (2): 167-184. o. DOI 10.1108/10444088108594

HRCITY SMART CITY SYSTEM AS SUPPORT IN BUSINESS DECISION MAKING FOR WASTE DISPOSAL

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ABSTRACT
The future of the world depends on a healthy and green planet. The European Green Plan package is an EU initiative to ensure the EU's green transition. The green plan clearly highlights the link between the circular economy, environmental protection and efficient waste disposal. HRcity, as part of the smart city system, provides support for advanced business decision-making related to waste disposal. This paper presents the architecture of the E-waste module, its functionality and the way of using modern technologies to support all activities. The technologies used in the implementation of the entire ICT system are emphasized. Internal processes are described in detail, with the use of AI, that helps the company management to make quick and high-quality decisions. It also presentation the connection between actors in the process of waste disposal and the data flow between them. The article highlights the benefits that the use of this business model brings to the implementation of the green plan.
Keywords: *Business decision, Environmental protection, ICT system, Smart city*

1. INTRODUCTION
Nowadays, extreme importance is given to the preservation of the environment, living in a healthy environment, and waste disposal, which has become a significant problem. This problem is especially pronounced in urban areas. According to the latest research, the increase in waste is constantly on the rise. Every year, around 11 billion tons of solid waste are generated worldwide indicating that each person is responsible for producing over a ton on average and this number is rising. It is estimated that the amount of waste generated in 2025 will be twice as large as in 2000 (Wahid et al., 2021). The increase in waste has a direct impact on the costs of its disposal. Such global trends impose the need to efficiently dispose of waste and the need to use a business model that will contribute to savings and efficiency in the long term. The digitization process has also affected the waste disposal segment. The reason for this is that the provision of waste management services is closely related to living in an urban centre. Very often, applications that are used for managing waste disposal operations are part of a smart city system implemented at the city level. Waste collection very often uses various IoT technologies and various services to collect information in real time. In this way, it is possible to quickly make business decisions adapted to the current situation on the ground (Theodoros et al., 2015). In order to achieve efficient disposal, various innovative technologies have been developed that have been successfully incorporated into waste disposal systems. This refers to different waste dumpsters, garbage cans, garbage trucks and other devices used in the waste collection process (Oluwasegun et at.,2023).

The HRcity cloud system and the E-waste application belong precisely to the group of applications that aim to increase the efficiency of the business operations of companies that are based on waste management. Efficiency related to optimizing waste removal, planning removal and direct communication with users of the disposal service has been increasing (Trstenjak, E. 2022). The rest of the paper is organized as follows; some related works on waste management and the relation to business decision-making in Section 2. Section 3 presents the structure of framework and used technologies. An overview of the working principles and the way of making business decisions is presented in Section 4. Section 5 presents achieved results of the evaluation of system and application efficiency. Finally, the last Section is the conclusions and recommendations for future research.

2. LITERATURE REVIEW

The literature review in this section is the application of digital solutions in the business process to increase the efficiency of waste disposal. Martikkala et al., (2023) presented digital system for dynamic optimization of the textile waste collection route. The authors presented the developed Arduino-based sensors collected actual data in Finnish outdoor conditions for over twelve months. The viability of the smart waste collection system was complemented with a case study evaluating the collection cost of the conventional and dynamic scheme of discarded textiles. An experimental study in the paper showed a reduction in waste collection costs using a dynamic model compared to a conventional model. Andeobu et at. (2022) in their work presented the adoption of AI techniques that offer alternative innovative approaches to solid waste management (SWM). This study examines the application of Artificial Intelligence AI technologies in various areas of SWM (generation, sorting, collection, vehicle routing, treatment, disposal and waste management planning) to enhance sustainable waste management practices in Australia. AI-based models which are used for prediction abilities when compared to other models used in forecasting solid waste generation and recycling are described in the paper. The presented study is intended for waste management organizations to reduce costs, increase efficiency and change the way we approach solid waste management. Fang et at. (2023) published an overview of applications that use artificial intelligence in order to improve waste management. The positive results that the use of artificial intelligence has brought to business in terms of the reduction of transport costs and the improvement of certain business processes are presented. Sahoo et at. (2005) presented comprehensive route-management system which reduced operating costs, provided better customer service, and determined appropriate prices. The features of the application and the analysis of the benefits it brought to companies that used this method of optimization over a longer period are described in detail. Abdallah et at. (2020) presents a review that compiled 85 research studies, published between 2004 and 2019, analyzing the application of AI in various SWM fields, including forecasting of waste characteristics, waste bin level detection, process parameters prediction, vehicle routing and SWM planning. This review provides comprehensive analysis of the different AI models and techniques applied in SWM.

3. THE PROPOSED FRAMEWORK AND TECHNOLOGY

The Hrcity system is a smart city system that enables the connection of various institutions and the city administration into a single unit, and provides citizens with the possibility of direct communication with the stakeholders of this system. In its architecture, the system has an implemented module intended for companies dealing with waste disposal.

3.1. Overview of the framework structure

The HRcity module responsible for waste disposal consists of several separate components. The module represents a separate unit within the smart system. Figure 1 shows the architecture

of the module and the interconnection of components. The central component in the module is the database. The database is connected to all internal components. The input data that is written to the database comes through the use of two components. The E-coupon component is a component that enables external users to send management requests for the removal of bulky waste. The e-coupon represents digital information about the user's request to dispose of his waste from a specific location in the settlement where the company provides waste removal services. E-coupons are sent by users via their mobile devices. The e-coupon uses a special data record format: information about the user, type of waste, amount of waste, location address, collection date, etc. Users' mobile devices connect to the waste management system using the Application Program Interface API component. The API component has implemented communication protocols used when sending data between the system and mobile devices. In a way, this component also represents protection against uncontrolled user access. The API uses various validation methods to check the content of the E-coupon before recording it in the central database.
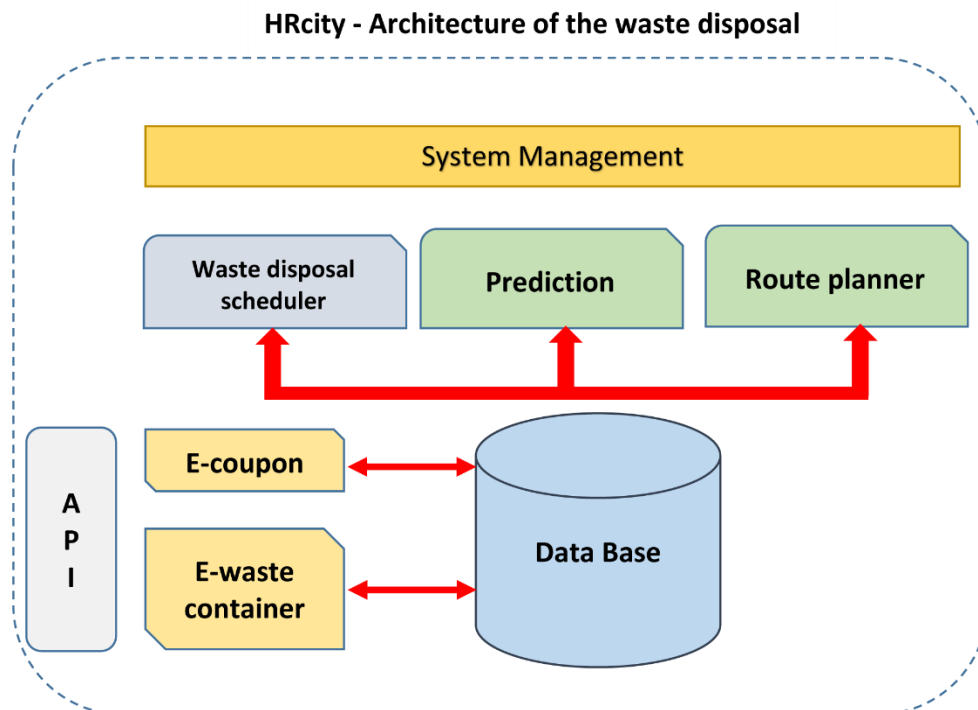
Figure 1: Architecture of the waste management module and its components
(Source: Authors)

The API component is also used by the E-waste container component. This component is responsible for communication with IoT devices located on waste containers. In this particular case, IoT devices measure the occupancy of the container and send information about it in real time to the system. The information shows the percentage of container occupancy and its GEO location. Information about occupancy is recorded in the database, and management can plan the terms and dynamics of waste collection based on this information. Managers can adapt existing plans according to the actual current situation in the settlement/city. For the management needs, and improvement of the planning of the removal, three components have been implemented in the system. All three components use AI methods in their work, which enable them to make quality business decisions. The first of them is the Waste disposal scheduler component. The component is in charge of forming the delivery schedule.

The collection schedule contains information on collection of locations, the type of waste that needs to be disposed of, and the collection date. Managers use this module to create a collection schedule, determine the vehicles that will be used in waste disposal, and visually review the collection locations. On the basis of the received e-coupons, system creates collecting proposal, which is coordinated with the previous plan. It is not possible to plan in advance the dynamics and quantity of the number of requests received from users via e-coupons. For this reason, when e-coupons are collected on a daily basis and the types of waste are determined, the term of their disposal, the existing removal plan is corrected. Based on the data, the system suggests to the management how to optimally carry out daily waste disposal. The second component is a component for predicting the amount of waste for a certain period. The prediction is used to predict the amount of waste that will need to be disposed of for each individual calendar day. In its work, this component uses data on waste disposal from the past period. In its prediction, the system uses various machine learning methods which, by analyzing a large amount of data, provide information on what the situation with waste disposal could be, in which parts of the settlement/city a greater amount of traffic will be recorded, and the need for additional vehicle engagement. It is known that the amount of waste fluctuates depending on the season, holidays, vacations of citizens, temperatures in the city, etc. This component and its algorithms take all this into account and make a prediction regarding the amount of waste and critical disposal points in the settlement/city. The third component is the route planner. The planner makes a proposal for the route that the waste collection vehicles will take. As a result, the optimal route results in a reduced waste removal path, reduction in removal time, savings in fuel, reduction in pollution, etc. The route planner suggests optimal routes to the management, and the manager may or may not accept the proposal depending on the actual situation in the company. In a number of examples of applications that use the garbage collection route optimizer, large long-term financial savings have been demonstrated (Szwarc, K. et at. 2021). At the top of the architecture is System Management. This component is used by managers in their daily work. They make business decisions related to waste disposal on the basis of an already established schedule or information presented by other modules.

3.2. Overview of the used technologies

The character and functionalities of certain applications determine to some extent the technologies that will be used during development. Today's application development is aimed at making application access flexible. Remote access to the application by different users, using different mobile devices is enabled. Such requirements direct the development of applications for the cloud environment. Figure 2 shows the structure of the complete cloud system and the technologies used. The HRcity system and E-waste module intended for waste management is a cloud application. Cloud applications are very often placed on a virtual server to which different users have direct access (Sharmin et at. 2016) and (Qian et at. 2009). The cloud environment allows the application to be accessed remotely by users using different types of devices. In Figure 2, using concentric circles, the levels and technologies that were used are highlighted. The central place is made up of a relational database used by cloud application. It contains all the information necessary for waste management. The first layer of the cloud system is connected to the database, the core of the application based on the object-oriented programming paradigm. The Spring Boot environment (Reddy 2017) and the Java programming language were used to develop the application. In this technology, the core of the cloud application, all the algorithms and methods necessary for the functionality of the application were developed. This part of the application is called the Backend application, because it runs various processes that are executed in the background, invisible to the application user.
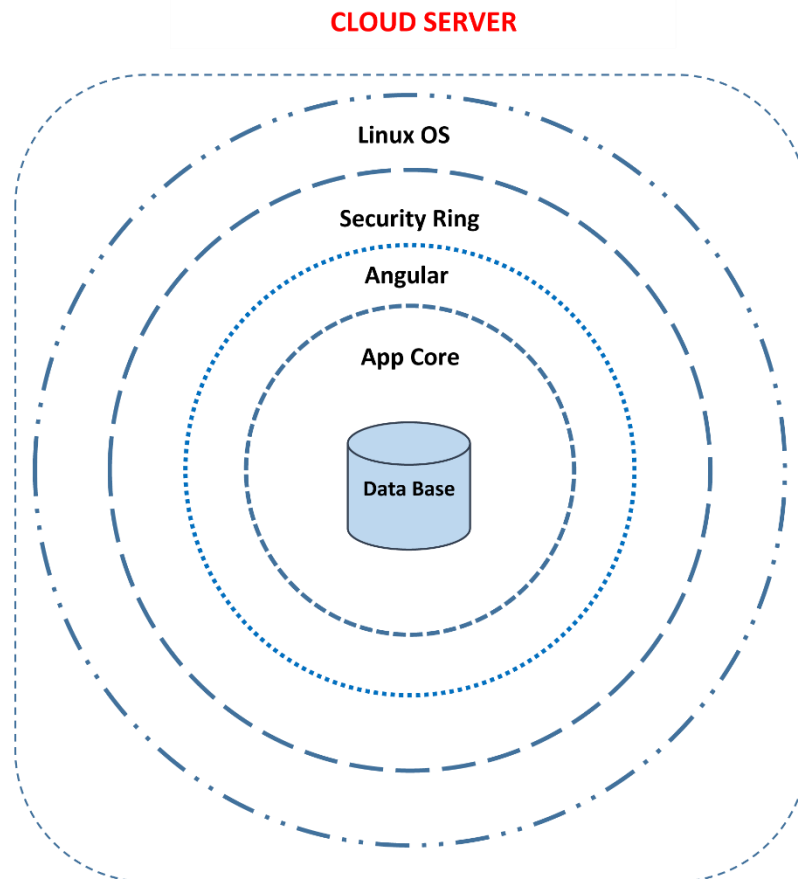
CLOUD SERVER

Figure 2: Cloud server and used tehnologies
(Source: Authors)

On that core application, an "outer shell" using Angular technology is placed (Fain. & Moiseev 2018). This level is called FronEnd, and its work is based on Javascript and HTML scripting languages. This part of the application provides the visual identity of the application and the user interface. Next is the level in charge of security, the Security Ring. In this part of the cloud system, technologies that enable the implementation of security protocols are used. This part is extremely important and prevents unauthorized access to the application. The cloud application designed in this way is placed on a Linux operating system, which represents the last layer in the picture. Additional tools are installed inside the Linux OS that ensure the Internet security of the entire HRcity system. Security mechanisms and protocols are in place, which is the standard way to implement access control, due to the fact that HRcity is an open access application. Due to its exposure to possible Internet attacks or attempts at unauthorized access to resources, it is necessary to use additional technologies and access protocols. Each cloud server is defined by its own resources that it uses when executing an application. This refers to the size of the memory, the speed of the processing unit, the character of the processor and a number of additional parameters. Depending on the character and complexity of the application, the expected number of users who will access the application, the optimal configuration of the cloud server is determined.

4. BUSINESS DECISION MAKING
Making quality business decisions is of great importance to the success of any company. In the era of digitization and the development of new application solutions, business decision-making and management of a company began to rely heavily on information generated by applications.

The increasingly popular Artificial Intelligence (AI) is increasingly present in applications used by company management. With its AI methods, it analyzes a large amount of data and presents the obtained results in a very short time. AI methods use algorithms to determine relationships between heterogeneous data. They enable the management to present the connection of data that is not visible to the eye, but exists. Based on the presented results, the management of the company can make the best business decisions in a short time. In addition to standard tasks, the management of companies that deal with waste management tries to efficiently organize waste removal, reduce business costs and, if possible, plan the necessary resources in the future period. As for waste removal in Croatia, two basic categories of removal are observed. The first category is the regular removal of everyday waste according to the removal schedule for a certain settlement. This is the removal of mixed or sorted waste via containers or waste bins in a settlement. This is the removal of waste that is determined by the original removal schedule. For all streets in the settlement, pick-up dates are set throughout the year. Based on the removal plan, management can plan its resources. Another category of waste removal is the removal of bulky waste reported by service users. This type of waste is not planned, but appears periodically in the area of the entire settlement. Waste is reported by customers/citizens when they accumulate some waste that they want to dispose of. At the same time, the types of waste are different, which depends on the citizen who applied for waste removal. The management of companies dealing with waste disposal for the first category of waste generally wants to reduce the number of truck departures, if possible. A reduction in the number of truck departures directly results in a reduction in business costs, and indirectly in a reduction in environmental pollution. With the second category of removal, the goal of management is to successfully predict and optimize the collection of bulky waste, and determine how to dispose of as much waste as possible with one truck departure. The reduction in the number of truck departures directly affects the reduction of the total operating costs.

4.1. Business decision support components

Precisely because of these two categories of waste, the HRcity system uses different components for waste removal planning. The first category of problems is solved by using IoT, from which the system receives information about the state of the tank in real time. IoT sends information about the filling of garbage containers. This information makes it possible to assess whether it is necessary to send a truck to empty the waste container or not. If the container is filled less than 50%, its emptying can be delayed. In this way, the number of truck removals is reduced, thereby ensuring a reduction in general costs. The system has real-time information on the state of all containers in the entire city. Each container in the city, using its own IoT, sends information about its occupancy to the HRcity system every hour. Management that makes decisions can use data from IoT in two ways. The first decision is whether to send a waste truck to a specific location right now. Another advantage is that it is possible to predict the filling of the waste container in a certain period. AI and its machine learning methods use received data on container occupancy from the previous period. Based on this data, the system predicts the occupancy of the containers in a certain part of the settlement with high accuracy. The second category is solved by using E-coupons that users send to the HRcity system. E-coupons contain information about the type of waste and the date when that waste should be disposed of. The user should announce the removal of bulky waste, so that waste disposal can be optimally planned by the service provider. The application analyzes the received e-coupons, creates a collection schedule for the future period, informs the management a few days before the collection, suggests the optimal waste collection route. Based on the type of waste, management can determine the type of truck to use for waste disposal.

All this information increases efficiency in waste disposal. The system also monitors the number of issued e-coupons for each individual user, so that the management can form the price of removal depending on the quantity and frequency of removal.

4.2. Benefits of using HRcity system in Smart Waste Management

Introducing a new way of doing business is justified if the use of Smart waste management brings benefits to the company. In the age of digitization of business, efficient data analysis and making quality business decisions bring a number of advantages to companies:

- Reduction in collection costs, determining optimal routes, neglecting the removal of half-empty waste containers. All this in the long run leads to a reduction in removal costs. Saving fuel as well as manpower is extremely important in the domain of waste disposal.
- No missed pickups, using advanced IoT technologies, unlike traditional methods, eliminates the situation of overfilled waste containers. The system can notify the owners of the waste container about the planned time of collection at a pre-scheduled time.
- Prediction of waste quantity, based on analysis. Management can predict the filling of waste containers, plan the necessary human resources in a certain period, and define the minimum number of trucks to deal with waste removal.
- CO_2 emission reduction, optimization of the waste removal route, reduction of fuel consumption, which affects the reduction of CO_2 generation, making the waste management process more eco-friendly.
- Financial benefit, reduction of removal costs, reduction of driver hours, reduction of maintenance costs of waste removal trucks, efficient planning of waste fleet maintenance costs.

Various studies have shown that the use of a smart waste management system can bring to reduction of costs for companies. It is not only financial savings, but also reduction in time for care, raising the quality of communication between management and service providers.

5. EVALUATION OF SYSTEM EFFICIENCY

For research purposes, a survey was prepared and presented to managers of companies that use the HRcity system in their operations.

Figure following on the next page
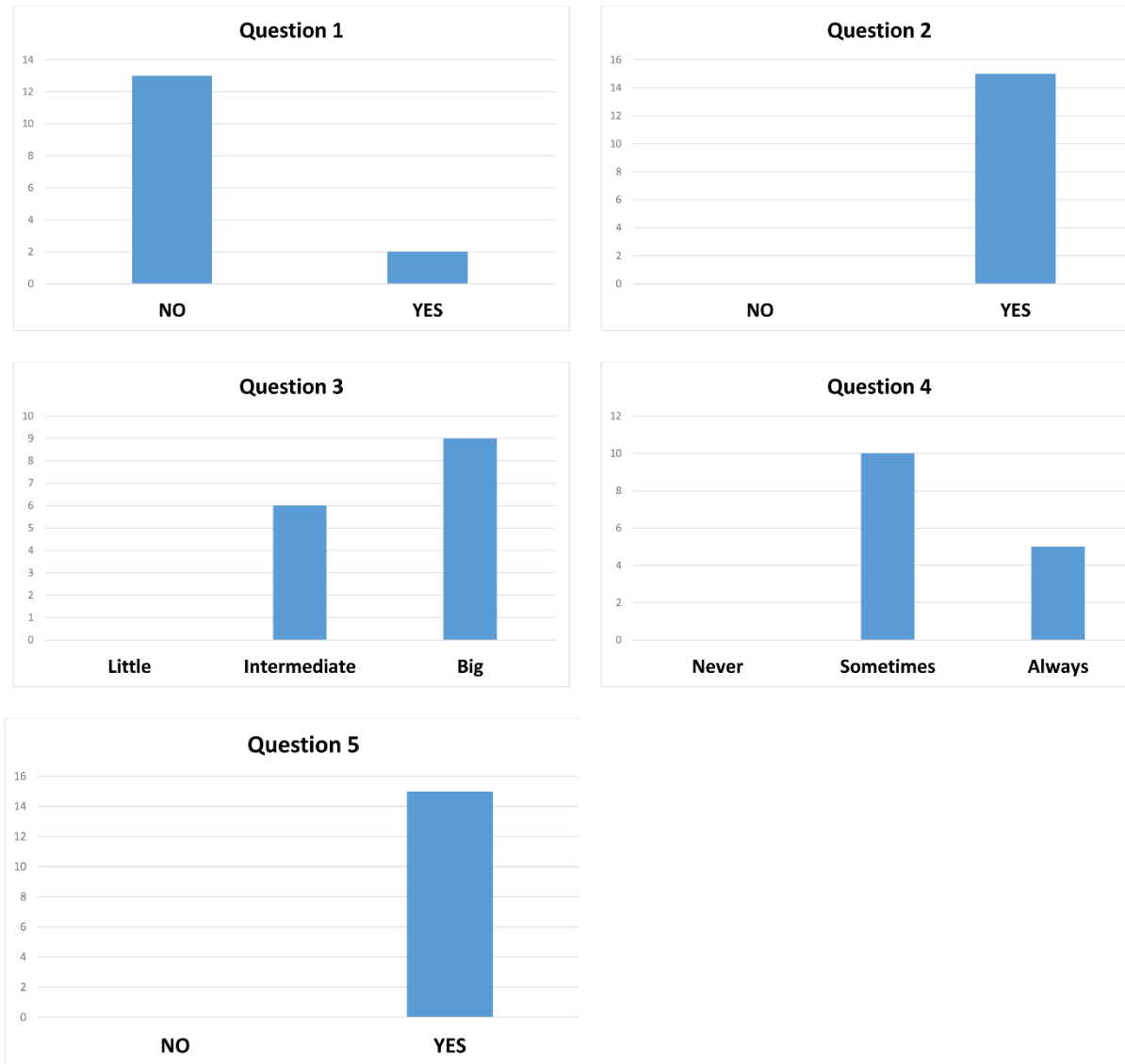
Figure 3: Survey results
(Source: Authors)

The aim of the survey was to get feedback on whether the system justified the set goals and in which parts it needs to be improved. An opinion was sought on the benefits brought by the use of such a system in business decision-making. The survey was conducted after the company's management had used the system for a minimum of 6 months, a period that gives enough time for the management to get to know all the functionalities of the application. The manager's opinion was sought on the benefits of using such a system in business decision-making. The survey was conducted in two medium-sized waste disposal companies in Croatia. The survey had only a few questions:

1) Question : Have you used applications that helped in making business decisions before?
2) Question: Does the system help you in planning waste disposal?
3) Question: How useful is the information that the system shows you on a daily basis?
4) Question: To what extent do your business decisions rely on suggested solutions provided by the system?
5) Question: Would you like to work without using the smart waste management system and return to the older way of making business decisions?

Figure 3. shows graphs showing the results of processing survey questions. The analysis of the results of the survey by individual questions imposes some conclusions. The answers to the first question indicate that the standard way of making decisions is still used in companies. That companies maintain a standard way of doing business and use well-established methods and ways of disposing of waste. The planning of waste removal on an annual level is repeated from year to year because people are used to that way of working. In some cases, a printed form of informing users about the waste collection schedule is still being used. So the results obtained on the first question are not a surprise. The answers to the second question suggest that managers saw the benefits of using this kind of system in a relatively short period of time and gradually rely on new information provided by the system. The answers to the third question are an indication of the positive effects of the introduction of such a system in the implementation of everyday business processes, which is extremely important for the justification of the digitization of business and the introduction of a smart waste management system. The answer to the last question is a confirmation that the management has started using a new way of business model for making quality business decisions. This is an indication of the direction of the future management business model and the confirmation that in the future, management will look for even more additional functionality from similar applications and expect additional useful information that will make their work easier. In general, the HRcity system and E-waste module justified its purpose according to the opinion of the company's management. It remains to be seen how existing algorithms and information presentation methods can be improved.

6. CONCLUSION
This paper has introduced a cloud system and application for support in business decision making for waste disposal. This study showed a new way of making business decisions. The research has shown a way to improve business decision-making. The paper presents the basic architecture and structure of the smart application and explains its basic components. For each component, its mode of operation is briefly described and for which business purpose it is used. The internal processes that take place in the application are described, as well as how the information that is presented to the management of the company is formed. In addition to the structure of the application, the structure of the cloud server is presented in the paper, as well as technologies and levels of their activity and the reason for their use in the HRcity system. For the purpose of this article, a survey was conducted among management members in order to assess the meaningfulness of introducing such a decision-making system. The questions were designed in such a way as to determine whether the introduction of an application that helps in planning waste disposal beneficial for companies. This application and new way of decision-making was accepted by the companies' management. Despite a simple survey, its results indicated the trend and future of such applications. The results of the survey indicate a positive opinion of the companies' management about the usefulness of using the new tool for waste disposal planning. The positive attitude of the management certainly gives a positive direction to the further use of similar software solutions. For the application itself, there is enough space for its improvement and the implementation of new functionalities. The implementation itself will be closely related to the users of this system, the management that takes care of efficient waste disposal.

LITERATURE:
1. Wahid, F. et at. (2021). *Recycling of landfill wastes (tyres, plastics and glass) in construction – A review on global waste generation, performance, application and future opportunities*. Resources, Conservation and Recycling, 173, 1-39.

2. Theodoros, A., Arkady, Z. & Alexey, M. (2015). *Robust Waste Collection exploiting Cost Efficiency of IoT potentiality in Smart Cities*. 2015 International Conference on Recent Advances in Internet of Things (RIoT), 1-6

3. Oluwasegun, J. A., Thuthukani, X., Nonsikelelo, N. M., Thuso, T. M., Experience, E. N. & Simphiwe, M. M. (2023). *The Adoption of an Intelligent Waste Collection System in a Smart City*. 2023 Conference on Information Communications Technology and Society (ICTAS), 1-6.

4. Trstenjak, E. & Trstenjak, B. (2022). *Implementacija aplikacije HRcity*. Zbornik Međimurskog veleučilišta u Čakovcu, 13, 91-97.

5. Martikkala, A., Mayanti, B., Helo, P., Lobov, A. & Ituarte, I. F. (2023). *Smart textile waste collection system – Dynamic route optimization with IoT*. Journal of Environmental Management, 335, 1-10.

6. Andeobu, L., Wibowo, S. & Grandhi, S. (2022). *Artificial intelligence applications for sustainable solid waste management practices in Australia: A systematic review*. Science of The Total Environment, 834:155389.

7. Fang, B., Yu, J., Chen, Z. et al. (2023). *Artificial intelligence for waste management in smart cities: a review*. Environ Chem Lett 21, 1959–1989.

8. Sahoo, S., Kim, S., Kim, B.I., Kraas, B. & Popov, A. (2005). *Routing Optimization for Waste Management*. INFORMS, 35, 24-36.

9. Abdallah, M., Talib, M.A. et al. (2020). *Artificial intelligence applications in solid waste management: A systematic research review*. Waste Management, 109, 231-246.

10. Sharmin, S. & Al-Amin, S.T. (2016). *A Cloud-based Dynamic Waste Management System for Smart Cities*. Proceedings of the 7th Annual Symposium on Computing for Development, 20, 1-4.

11. Qian, L., Luo, Z., Du, Y. & Guo, L.(2009). *Cloud Computing: An Overview*. IEEE International Conference on Cloud Computing CloudCom 2009, 626–631.

12. Reddy, K.(2017). *Introduction to Spring Boot*. Press. Apress, Berkeley (2017), 1-20.

13. Fain, Y. & Moiseev, A. (2018). *Angular Development with TypeScript, Second Edition*. Press. Manning (2018).

14. Szwarc, K., Nowakowski, P. & Boryczka, U. (2021). *An evolutionary approach to the vehicle route planning in e-waste mobile collection on demand*. Soft Computing, 25, 6665-6680.

ORGANIZATIONAL CITIZENSHIP BEHAVIOR FOR THE ENVIRONMENT - A PILOT STUDY IN PORTUGUESE ORGANIZATIONS

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ABSTRACT

Human Resources Management (HRM) acts to respond to market challenges by implementing and supporting strategies that combine the needs of employees and the objectives of companies, in a perspective of a long-term strategic vision, aligned with the principles of sustainability. In this context, this study investigates the organizational citizenship behavior for the environment, in Portuguese organizations. This is a pilot study that aims to validate a questionnaire answered by employees in organizations, about their Organizational Citizenship Behavior for the Environment (OCBE). This survey is an adaptation from the validated and published work from Paille et. al (2014). In this pilot test, the sample is composed by respondents from organizations in Porto district, with activities branches mainly within the E code as defined in the Portuguese Classification of Economic Activities as "collection, treatment and distribution of water, sanitation, waste management and depollution". Almost all organizations are medium and large sized and have already implemented at least one system of environmental and quality management and sustainability. Two thirds of this sample are female, mainly with higher education studies in the engineering area, with 30-49 years old. The respondents are mostly environmentally aware, and their organizations are well sustainable. The reward systems for employees and managers were the less positive issues among all. The adaptation of this survey to Portuguese has resulted in reliable and valid questionnaires, which can be used to evaluate the environmental performance of organizations and the impact of Human Resources management. The results indicate that, in general, the employees who participated in the study internalize and promote the Organizational Citizenship Behavior for the Environment. The results indicate that, in general, the employees who participated in the study internalize and promote the Organizational Citizenship Behavior for the Environment.
Keywords: *Environment, Human Resource Management, Organizational Citizenship Behavior for the Environment, Sustainability Practices*

1. INTRODUCTION

Sustainability and environmental preservation are critical factors in creating long-term value for individuals and organizations. Employees are crucial stakeholders in the implementation of sustainability practices, implying that organizations must invest adequate resources to not only encourage sustainability practices but also align employees' interests with the organization's objectives (Paillé et al., 2014; Anser et al., 2021). This alignment can be considered a successful factor when managers have the same involvement and have understanding that Human Resources Management (HRM) practices can help to develop this engagement and result in

Environmental Performance. In this perspective, Boiral and Paillé (2012) developed and partially validated a measure of organizational citizenship behaviors for the environment (OCBE) that comprises three factors: eco-initiatives, eco-helping, and eco-civic engagement. OCBE is an employee's voluntary behavior that is not followed by rewards or awards from the firm that leads to the environment. The success of environmental programs depends on employee behavior and even exceeds the formal awards and performance evaluation systems (Daily et al., 2009). With regard to OCBE, organizations cannot gauge how frequently employees enact different types of pro-environmental behaviors. Some research shows that individuals who engage in one type of pro-environmental behavior (e.g., recycling) do not necessarily engage in other types (e.g., digital transition and circular economy). As a result, companies have difficulty to tailor interventions to target influencing specific types of OCBE. Based on this theme, our research uses one questionnaire developed from Paillé et al. (2014) to test the scale who assesses the extent to which employees engage in pro-environmental behaviors in general (e.g.,"I carry out environmental actions and initiatives in my daily work activities"). The purpose of this research is to examine how employees are involved at their own level in helping their companies become greener. In this paper we focus on OCBE. The present paper begins with a brief review of the literature, followed by a presentation of the method and results. The findings are discussed in light of the relevant literature.

2. THEORETICAL BACKGROUND
2.1. Organizational Citizenship Behaviors for the Environment
OCBE is considered individual social behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and promotes environmental sustainability, and indirectly benefits the organization and specific individuals (Robertson and Barling, 2017; Boiral, 2009). Examples of these behaviors include recycling, mimimizing water comsuption and promoting energy efficiency at work and encouraging other employees to reduce their environmental impact. Daily et al. (2009, p. 246) referred to OCBE as ''discretionary acts by employees within the organization not rewarded or required that are directed toward environmental improvement''. According to these authors, when employee exhibits OCBE, they participate in voluntary environmental actions beyond work requirements. Daily et al. (2009) also developed a theoretical model demonstrating the plausible sources and consequences of OCBE. Employee environmental actions are very important for organizations to develop their environmental sustainability practices. These actions are often defined as behaviors that promote employees engagement and contribute to environmental sustainability (Ones and Dilchert, 2012; Wang et al., 2018; Sabbir and Taufique, 2021). The base of this kind of behavior is to be discrete and according to Organ (1988), discretionary acts suggest that individuals are free to act or not to act. Discretionary actions cannot be obtained, for example, through the elements of a contractual employment or the threat of punishment. The OCBE reflects employee willingness to cooperate with one´s company and its members by performing behaviors beyond one's job duties that benefit the natural environment (Boiral and Paillé, 2012). In other words, in the scenario of green behavior, the expression ''discretionary acts'' indicates that employees are able to make decisions at their own level. An example of OCBE is when employees propose suggestions to reduce resource and energy consumption, or persuade colleagues to conduct their work in other more environmentally friendly ways (Boiral and Paillé, 2012). OCBE can benefit both the self and others, for example, specific individuals. Furthermore, pro-environmental behaviors have been linked to subjective well-being, satisfaction, and perceived happiness. OCBE can also benefit individuals by having a positive impact on their health. For example, natural disasters such as heat waves are linked to increases in morbidity and morality rates (Honda et al., 2014; Stanke et. al., 2013) and depression, guilt and despair are associated with environmental issues (Doherty and Clayton, 2011).

In this context, involvement and participation in OCBE can indirectly mitigate the negative effects of environmental degradation on human health through their aggregate contributions to environmental preservation. Additionally, engaging in pro-environmental behaviors such as using environmentally-friendly modes of transportation, for example, cycling to work (Robertson and Barling, 2017) can positively impact individuals physical and mental health. Another example is the practice of helping other employees engage in environmental initiatives at work (e.g., showing coworkers how to print double-sided). Doing so would help others experience the positive outcomes that result from engaging in OCBE. Another important factor is the organizational identification that can helps employees to sympathize with the organizational goals and employees exert extra efforts to make organizations successful (Jones et al., 2014). When employees identify with the company, almost all perceived differences between their own interests and those of their organizations are mitigated, thereby making employees assimilate their organizations' values, beliefs, and goals as their own and reinforce their self-concepts (Brammer et al., 2015). Behaviors that companies expect from employees gradually emerge part of the individual's self-concept. Many citizenship behaviors have been connected with organizational identification, such as extending cooperation to coworkers and other members of the organization , engaging in creative endeavors to suggest new ideas, and sharing knowledge with others on a frequent and regular basis (Farooq et al., 2017). OCBE is a type of citizenship behavior, where employees who identify with the organization contribute positively towards the betterment of the environment. Organizations and individuals have realized that protecting environment, suggesting ideas to deal effectively with climate change and other environmental issues, and devising strategies to manage the environment effectively are some of the most important values that need to be incorporated in one's priorities and value systems (Cheema et al., 2020; Han et al., 2019). Corporations have a huge responsibility to act in social responsible manner as their operations and functioning directly affect the natural environment and society. Finally, considering the significant impact of employee environmental protection behavior on corporate environmental protection outcomes, a number of researchers have sought to identify the factors that influence OCBE. These factors include, for example, the organizational support perceived by the employees (Lamm et al., 2015; Paille and Mejia-Morelos, 2014), employee self-responsibility with respect to environmental protection (Zhang et al., 2016), corporate environmental protection measures at the organizational level (Paille, Boiral and Chen, 2013), corporate environmental concerns (Temminck et al., 2015).

3. METHODOLOGY
3.1. Participants
In this pilot study, the questionnaire for employees was sent to organizations working in the sector classified as E - collection, treatment, and distribution of water; sanitation, waste management and depollution according to the Portuguese Classification of Economic Activities (INE, 2007). From April to May 2023, 72 answers from employees were received but only 42 were complete and included in this pilot test.

3.2. Questionnaire
The questionnaire was adapted from Paille et al, (2014) and collects information about the Organizational Citizenship Behavior for the Environment (OCBE). This scale was developed by Boiral and Paille (2012) with 10 items about the environmental awareness and behavior of employees with their activities in the organization. A sample item is: "*I volunteer for projects, endeavors or events that address environmental issues in my organization*". An item about the oneself motivation to engage environmental actions independently from the organization orientation was included.

Sociodemographic data of participants and organizations were also collected. The questionnaire was translated to Portuguese by adopting the strategy of back translation technique, and then was analyzed by experts that evaluated the suitability of the items to the constructs to which they were referred to. Proper wording was also taken care of and all items were formulated in a positive sense.

3.3. Data Collection
After selecting the organizations, their CEOs were contacted by email to request the authorization to include their organization in this study. Subsequently, emails were sent to employees with the research objectives, the characteristics of data collection and questionnaire link. Participation was voluntary and confidential to avoid the possible effect of social desirability. The questionnaire was prepared on Limesurvey software (version 3.24.0+201013).

3.4. Statistical Analysis Methods
Preliminary analysis of the data was performed based on the descriptive statistics measures. Inspection of outliers, and normality was conducted using SPSS box-plots, Shapiro-Wilk test and calculation of coefficient/standard deviation ratio related to skewness and kurtosis. Exploratory Factorial Analysis (EFA) is a statistical technique that reduces the data into less variables that explains the data variance and explore the underlying theoretical structure. It was used the Principal Component method with orthogonal rotation Varimax for all OCBE items that are normal or at least acceptably mesokurtic and skewed (Pestana and Gageiro, 2014). Confirmatory Factor Analysis (CFA) is performed after to confirm the factor structure revealed by EFA. Common Method Variance (CMV) is the bias variance caused only by the measurement method rather than the variance related to the measured dimensions. This may influence undesirably the internal consistency by creating apparent correlations among the variables. CMV influence was evaluated by Harman's one-factor test using the Principal Component Analysis (PCA) with Varimax rotation to check whether a single component did not explain the majority of variance with 50.0 % threshold (Podsakoff, 2003). All statistical methods were performed in SPSS software (version 28.0), except CFA that was conducted in JASP (version 0.17.2) (JASP, 2023).

4. DATA ANALYSIS AND RESULTS
4.1. Descriptive Statistics of Participants and Organizations
The sociodemographic characteristics of participants (N = 42) revealed that two thirds are women and mostly has higher education studies, from 30 to 49 years old, and works as senior technicians. Concerning their organizations, respondents indicated that they are public, small and medium-sized, and located in Porto. Mostly are operating for more than 20 years old in the activity class of E-Collection, treatment, and distribution of water; sanitation, waste management and depollution (INE, 2007). About the environmental quality systems, practically all participants indicated that their organizations had already implemented at least one system. The most common systems were the environmental management system ISO 14001 and Life Cycle Assessment (LCA). The Eco-Management and Audit Scheme (EMAS) was not selected by the participants.

4.2. Descriptive Statistics of OCBE
Table 1 presents the descriptive statistics of OCBE data collected in employees' questionnaire, that are minimum, maximum, median, mean, variation coefficient (VC), and the absolute values of coefficient/standard deviation ratios related to skewness and kurtosis ($|g1/s(g1)|$ and $|g2/s(g2)|$, respectively). Items 2 and 3 received only positive answers (Agree or Strongly Agree) and items 9 and 10 accounted also neutral answers.

These items are about encouraging colleagues to adopt/express more environmentally sustainable behavior or about themselves doing it voluntarily. The other 7 items also received negative answers. Still, half of participants attributed at least 4 to all items, indicating their strong conscientiousness about the environmental issues. Means were between 3,97 and 4,69 and variation coefficients (VC) were between 10.5 and 23.5%. Interestingly, item 7 ("*I volunteer for projects, endeavors or events that address environmental issues in my organization.*") was the one with the lowest mean and the highest VC, meaning that respondents were more dsitributed among the possible answers.

OCBE Item	Min	Max	Me	Mean	VC (%)	|g1/s(g1)|	|g2/s(g2)|
1	2	5	5	4.69	13.3	6.80	11.7
2	4	5	5	4.64	10.5	1.54	2.26
3	4	5	5	4.56	11.1	0.59	2.69
4	1	5	4	4.14	20.4	4.26	5.74
5	2	5	5	4.61	14.0	5.43	8.14
6	2	5	5	4.50	15.5	4.10	4.39
7	1	5	4	3.97	23.5	2.63	2.03
8	2	5	4	4.28	18.2	2.36	0.78
9	3	5	5	4.47	13.6	1.77	0.53
10	3	5	4	4.36	14.7	1.24	0.76
11	2	5	5	4.39	17.5	3.10	1.71

Table 1: Descriptive statistics of OCBE
(Source: Own authorship)

Prior to factorial analysis, each item should be evaluated in terms of outliers, skewness, kurtosis, normal distribution, and the number of missings. The outliers were checked and are residual as well as the missing answers. Shapiro-Wilk test indicated that none of the items follows normal distribution ($p<0.001$). Despite of this result, these variables may be analyzed by factorial analysis if they possess an acceptable skewness and kurtosis, by verifying if coeficient/standard deviation ratio of skewness and Kurtosis are lower than 3.0 (Pestana and Gageiro, 2014). According to the results presented in Table 1, the items 2, 3 and 7-11 can be considered with acceptable deviations for running the factorial analysis.

4.3. Exploratory Factorial Analysis
EFA was performed for the 7 items of OCBE (2,3 and 7-11), that are the ones with acceptable asymmetry and kurtosis deviations. The Kaiser-Meyer-Olkin of Sample Adequacy (KMO) and Bartlett's Test of Sphericity are two statistical procedures that evaluate the quality of correlations between the variables. In this case, KMO value of 0,815 indicates that correlations are good and Bartlet´s test p of less than 0,001 proves high statistical significance (Field, 2009). These results allow the EFA implementation. According to the convergence of the scree plot and the Kaiser criterion, that defines the factor extraction with eigenvalues higher than 1.0, two factors were obtained that explain 72.98 % of the total data variance.

4.4. Confirmatory Factor Analysis
CFA was conducted with items 2, 3 and 7-11, considering 2 factors as demonstrated by EFA. The Kaiser–Meyer–Olkin measure verified the sampling adequacy for the analysis, KMO = 0.820 ('good' according to Field, 2009), and all KMO values for individual items ranged from 0.697 to 0.903, which is well above the acceptable limit of 0.5 (Field, 2009).

Bartlett's test of sphericity χ^2 (13) = 24,842, p < 0.001, indicated that correlations between items were sufficiently large for CFA. The Comparative Fit Index (CFI) and the Incremental Fit Index (IFI) were also used to assess the model fit quality, presenting values of 0.915 and 0.919, respectively. These 3 results verify the acceptable standards of goodness-of-fit suggested by Hair et al. (2010), that is $1.0 < \chi^2/df < 3.0$ and by Bentler and Bonett (1980), with threshold of 0.90 for CFI and IFI indices. The Root Mean Square Error, RMSEA = 0.147, was slightly above 0.100 as recommended by MacCallum et al. (1996). Table 2 shows the factor loadings after rotation and reliability of the proposed model in CFA. As factor loadings should be higher than 0.300, CFA was run without item 2, but KMO decreased to 0.797 and Cronbach alpha remain practically similar if this item is deleted. So, the decision was that item 2 should stay in the model. All the other items are important in the factor model because the Cronbach alpha decreased if the each one of the items is deleted. The values of Cronbach´s alpha and Average Variance Extracted (AVE) are above the threshold limits (0.7 and 0.5, respectively), thus indicating satisfactory levels of reliability and validity (Hair et al, 2010). The items that cluster on the same factors suggest that factors 1 and 2 represent an eco-activist and eco-action behavior, respectively.

Factor	OCBE Item	Factor Loading	α if item deleted	Reliability
Eco-activist behavior	2	0.287*	0.821	α = 0.820 AVE = 0.600
	3	0.429*	0.582	
	10	0.505*	0.674	
Eco-worker behavior	7	0.706*	0.811	α = 0.828 AVE = 0.568
	8	0.555*	0.814	
	9	0.492*	0.803	
	11	0.607*	0.774	

*p<0.001; AVE - Average variance extracted; α - Cronbach alpha
Table 2: CFA of OCBE
(Source: Own authorship)

4.5. Common Method of Variance
CMV influence was evaluated with Harman's one-factor test. Two components were extracted with eigenvalues higher than 1,0, with the first factor accounting for 38.42 % of the total variance explained (72.98 %). Thus, CMV did not appear to be a pervasive problem in this study (Podsakoff, 2003).

5. DISCUSSION
According to the results already presented, in descriptive statistics of OCBE, items 2 and 3 were those that only received positive answers. Item 2 analyzes the issue: *I voluntarily carry out environmental actions and initiatives in my daily activities at work*. Indeed, this behavior is in line with Daily et al (2009) who state that OCBE is an employee's voluntary behavior that is not followed by rewards or awards from the firm that leads to the environment. In other words, the employees who answered this questionnaire fit into this OCBE spirit of volunteerism. In the case of item 3, it analyzes the following: *I make suggestions to my colleagues about ways to more effectively protect the environment, even when it is not my direct responsibility*. Also in this case, the answers are in line with the literature, since Boiral and Paillé (2012) state that OCBE reflects employee willingness to cooperate with their colleagues by performing

behaviors that go beyond their direct responsibility. This issue is also related to the idea of citizenship behaviors, with regard to cooperation to coworkers and other members of the organization (De Roeck et al., 2016) and sharing knowledge with others on a frequent and regular basis (Farooq et al., 2017). Robertson and Barling (2017) also exemplify OCBE as a practice of helping other employees engage in environmental initiatives at work. Items 9 and 10 received neutral answers. Item 9 refers to the fact that employees encourage their colleagues to adopt more environmentally conscious behavior and item 10 relates to the fact that this encouragement is related to the expression of ideas and opinions on environmental issues. At this level, Boiral and Paillé (2012) refer that OCBE is also related to the fact that employees persuade colleagues to conduct their work in other more environmentally friendly ways. In the case of the remaining items (1, 4, 5, 6, 7, 8 e 11), there were also negative responses, which means that for some employees the degree of agreement with those questions regarding the analyzed items, within the scope of the OCBE, was low. However, at least half of the respondents gave positive answers (4 and 5) to all these items. In the case of item 1 - *In my work, I weigh my actions before doing something that could affect the environment* - we can see that this type of concern is related to employee self-responsibility with respect to environmental protection (Zhang et al., 2016). Regarding item 4 - *I actively participate in environmental events organized in and/or by my company* - this is in line with Daily et al. (2009), who state that when employees exhibit OCBE, they participate in voluntary environmental actions beyond work requirements. That is, this active and voluntary participation meets the concept of OCBE. In the case of item 5 - *I stay informed about my company's environmental initiatives* - some authors suggest that organizational communication has a great impact on OCBE (Seha, Retnowati and Elan, 2020), so in an organization where communication flows well, employees will find it easier to keep themselves informed about the company's practices, namely in environmental terms. Item 6 is about how employees undertake environmental actions that contribute positively to the organization's image. In this regard, it should be noted that, according to Daily et al (2009), the employees who joined OCBE participate in voluntary environmental actions beyond work requirements. Indeed, according to Organ (1988), discretionary acts (which form the basis of OCBE) suggest that individuals are free to act or not to act. In item 7, the employees' spirit of volunteerism is once again analyzed, in this case with regard to participation in projects, endeavors or events that address environmental issues in the organization. Interestingly, this item was the one that had the lowest average, but a higher coefficient of variation, which means that the responses were more divided. Still, the average response was positive. In this case, we can refer again to Daily et al (2009) who state that OCBE is an employee's voluntary behavior that is not followed by rewards from the company. This is in line with the discretionary spirit that underlies OCBE and which has been referenced by several authors, namely by Robertson and Barling (2017) or Boiral and Paillé (2012). In item 8 - *I spontaneously give my time to help my colleagues take the environment into account in everything they do at work* - we can emphasize that OCBE also implies this sharing of values. As already mentioned, Boiral and Paillé (2012) state that OCBE reflects employee willingness to cooperate with their colleagues by performing behaviors that go beyond their direct responsibility. Finally, with regard to item 11, it seeks to analyze the degree of motivation of employees to engage in environmental actions and initiatives in work regardless of firm orientations. Indeed, this engagement and its importance for companies' environmental practices has already been analyzed by several authors (Ones and Dilchert, 2012; Wang et al., 2018; Sabbir and Taufique, 2021). And here, too, it is important to note that OCBE implies that employees participate in voluntary environmental actions beyond work requirements (Daily et al., 2009). Although it is important for organizations to motivate their employees to assimilate their values, beliefs, and goals as their own and reinforce their self-concepts (Brammer et al., 2015) and it is true that many citizenship behaviors have been

connected with organizational identification (De Roeck et al., 2016), it is also important that these values can be cultivated individually, regardless of organizational guidelines, especially when environmental sustainability issues are involved. That is, although it is very relevant, at the level of the OCBE, corporate environmental protection measures at the organizational level (Paille, Boiral and Chen, 2013) and corporate environmental concerns (Temminck et al., 2015), it is also of the utmost importance to employee self-responsibility with respect to environmental protection (Zhang et al., 2016).

6. CONCLUSION

This is a pilot study that aimed to validate a questionnaire answered by employees in organizations about their OCBE and was based on Paillé et al. (2014) research, that assesses the extent to which employees engage in pro-environmental behaviors. Eleven items related to the OCBE were analyzed. The results indicated that, in general, the employees who participated in the study internalize and promote OCBE, especially in some dimensions, namely in terms of volunteering to develop environmental actions throughout their day-to-day work and the level of sharing with colleagues about good environmental practices, even though this is not one of their functions. The remaining items, despite not having such positive results and, in some cases, even having some negative responses, had at least half of the participants responding positively. These results are important to demonstrate that there is already an awareness at OCBE level, with regard to employees of organizations, but this awareness could be greater, so HRM practices must act in this direction, so that managers can influence employees to be more eco-activists or eco-workers. Indeed, this study is relevant due to the fact that this scale has not yet been applied in the Portuguese context and also because it draws attention to one of the most important topics for organizational current affairs - the topic of sustainability. In the particular case of this study, a limitation is related to the fact that the scale by Paillé et al. (2014) was not applied to managers, but only to employees, so it would have been interesting to compare the answers of both. Another limiting issue is related to the reduced sample size, as 72 responses were obtained, but only 42 were complete and included in this pilot test. As future studies, we suggest the application of the scales used by Paillé et al. (2014) to managers, where other variables are analyzed, such as strategic human resources management, internal environmental orientation and environmental performance. The comparison of both scales will allow drawing more solid conclusions about the relationship between OCBE and organizational practices, namely at the environmental level. Another suggestion will be to apply these scales in another context, namely outside Portugal, so that a comparative analysis on these topics can be carried out, based on the cultural factor.

LITERATURE:
1. Anser, M. K., Shafique, S., Usman, M., Akhtar, N., and Ali, M. (2021), "Spiritual leadership and organizational citizenship behavior for the environment: an intervening and interactional analysis", *Journal of environmental planning and management*, 64(8), pp. 1496–1514. https://doi.org/10.1080/09640568.2020.1832446
2. Bentler, P., and Bonett, D. (1980), "Significance tests and goodness of fit in the analysis of covariance structures", *Psychological Bulletin*, 88(3), pp. 588–606. http://dx.doi.org/10.1037/0033-2909.88.3.588
3. Brammer, S., He, H., and Mellahi, K. (2015), "Corporate social responsibility, employee organizational identification, and creative effort: The moderating impact of corporate ability", *Group & Organization Management*, *40*(3), pp. 323–352. https://doi.org/10.1177/1059601114562246

4. Boiral, O. (2009). Greening the corporation through organizational citizenship behaviors. Journal of Business Ethics, 87, 221–236. https://doi.org/10.1007/s10551-008-9881-2

5. Boiral, O., and Paillé, P. (2012), "Organizational citizenship behaviour for the environment: measurement and validation", *Journal of Business Ethics*, 109(4), pp. 431–446. https://doi.org/10.1007/s10551-011-1138-9

6. Cheema, S., Afsar, B., and Javed, F. (2020), "Employees' corporate social responsibility perceptions and organizational citizenship behaviors for the environment: The mediating roles of organizational identification and environmental orientation fit", *Corp Soc Resp Env Ma*, 27, pp. 9– 21. https://doi.org/10.1002/csr.1769

7. Daily, B. F., Bishop, J. W., and Govindarajulu, N. (2009), "A conceptual model for organizational citizenship behavior directed toward the environment", *Business & society*, 48(2), pp. 243–256. https://doi.org/10.1177/0007650308315439

8. De Roeck, K., El Akremi, A., and Swaen, V. (2016), "Consistency matters! How and when does corporate social responsibility affect employees' organizational identification?", *Journal of Management Studies*, *53*(7), pp. 1141–1168. https://doi.org/10.1111/joms.12216

9. Doherty, T. J., and Clayton, S. (2011), "The psychological impacts of global climate change", *The American Psychologist,* 66, pp. 265–276. DOI:10.1037/a0023141

10. Farooq, O., Rupp, D. E., and Farooq, M. (2017), "The multiple pathways through which internal and external corporate social responsibility influence organizational identification and multifoci outcomes: The moderating role of cultural and social orientations", *Academy of Management Journal*, *60*(3), pp. 954–985. https://doi.org/10.5465/amj.2014.0849

11. Field, A. P. (2009), "Discovering statistics using SPSS", (3rd ed.). London: Sage.

12. Hair, J., Black, W., Babin, B., Anderson, R., and Tatham, R. (2010), "Multivariate Data Analysis", (7th ed.).Uupper Saddle River, NJ: Pearson Education.

13. Han, Zhiyong, Qun Wang, and Xiang Yan. (2019), "How Responsible Leadership Motivates Employees to Engage in Organizational Citizenship Behavior for the Environment: A Double-Mediation Model", *Sustainability* 11(3), pp. 605. https://doi.org/10.3390/su11030605

14. Honda, Y., Kondo, M., McGregor, G., Kim, H., Guo, Y. L., Hijioka, Y., and Kovats, R. S. (2014), "Heat-related mortality risk model for climate change impact projection", *Environmental Health and Preventive Medicine*, 19, pp. 56–63. https://doi.org/10.1007/s12199-013-0354-6

15. INE (2007), "Classificação Portuguesa das Actividades Económicas", rev.3, editor: Instituto Nacional de Estatística, I. P.

16. JASP TEAM (2023). JASP (VERSION 0.17.2)[COMPUTER SOFTWARE].

17. Jones Christensen, L., Mackey, A., and Whetten, D. (2014), "Taking responsibility for corporate social responsibility: The role of leaders in creating, implementing, sustaining, or avoiding socially responsible firm behaviors", *Academy of Management Perspectives*, *28*(2), pp. 164–178. https://doi.org/10.5465/amp.2012.0047

18. Lamm, E., Tosti-Kharas, J., and King, C.E. (2015), "Empowering employee sustainability: Perceived organizational support toward the environment", *J. Business Ethics*, 128, pp. 207–220.

19. Maccallum, R., Browne, M., and Sugawara, H. (1996), "Power analysis and determination of sample size for covariance structure modeling", Psychological Methods, 1(2), pp. 130–149.

20. Ones D. S., and Dilchert S. (2012), "Employee green behaviors," in *Managing HR for Environmental Sustainability*, eds Jackson S. E., Ones D. S., Dilchert S. (San Francisco, CA: Jossey-Bass/Wiley;), 85–116.

21. Organ, D. W. (1988), Organizational citizenship behavior: The good soldier syndrome. Lexington, MA: Lexington Books.

22. Paille, P., Boiral, O., Chen, Y. (2013), "Linking environmental management practices and organizational citizenship behaviour for the environment: A social exchange perspective", *Int. J. Hum. Resour. Manag,*, 24, pp. 3552–3575.

23. Paille, P., Chen, Y., Boiral, O., and Jin, J. (2014), "The impact of human resource management on environmental performance: an employee level study", *Journal of Business Ethics*, 121(3), pp. 451–466. https://doi. org/10.1007/s10551-013-1732-0

24. Paille, P., Mejia-Morelos, J. H. (2014), "Antecedents of pro-environmental behaviours at work: The moderating influence of psychological contract breach", *J. Environ. Psychol*, 38, pp.124–131.

25. Pestana, M. H., and Gageiro, J. N. (2014), "Análise de dados para ciências sociais - a complementaridade do SPSS", 6ªedição, Edições Silabo, Lda.

26. Podsakoff, P. M., Mackenzie, S. B., Lee, J. Y., and Podsakoff, N. P. (2003), "common method biases in behavioral research: a critical review of the literature and recommended remedies", Journal of Applied Psychology, 88(5), pp. 879–903

27. Robertson, J. L., an Barling, J. (2017), "Toward a new measure of organizational environmental citizenship behavior", *Journal of Business Research*, elsevier, 75, pp. 57-66. doi: 10.1016/j.jbusres.2017.02.007

28. Sabbir M. M., and Taufique K. (2021), "Sustainable employee green behavior in the workplace: integrating cognitive and non-cognitive factors in corporate environmental policy", *Business Strategy and the Environment*, 31 110–128. 10.1002/bse.2877

29. Seha, L., Retnowati, A., and Elan, R. (2021), "The Influence of Organizational Communication and Non Physical Environment on Organizational Citizenship Behavior in the Language", Faculty of State University X (*PTN X*) in Bandung. 10.2991/assehr.k.210312.015

30. Stanke, C., Kerac, M., Prudhomme, C., Medlock, J., and Murray, V. (2013), "Health effects of drought: a systematic review of the evidence", PLOS Currents Disasters.

31. Temminck, E., Mearns, K., and Fruhen, L. (2015), "Motivating employees towards sustainable behavior", *Business Strateg.Environ*, 24, pp. 402–412.

32. Wang G., He Q., Xia B., Meng X., and Wu P. (2018), "Impact of institutional pressures on organizational citizenship behaviors for the environment: evidence from megaprojects." *Journal of Management in Engineering*, 34:04018028. 10.1061/(ASCE)ME.1943-5479.0000628

33. Zhang, J. L., Chen, Y. F., and Liu, J. (2016), "Ethical leadership and OCBE: The influence of pro-social motivation and self accountability", *Proceedings*. https://doi.org/10.5465/ ambpp.2016.15588abstract

THE QUALITY IN HIGHER EDUCATION IN PORTUGAL: IMBALANCE BETWEEN TEACHING AND RESEARCH

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ABSTRACT
The major changes experienced in higher education in recent years, due to globalization and internationalization, require a thorough study on models of the evaluation procedures of higher education institutions (HEI's) especially in pedagogical issues and quality management models. An important factor concerns the expectations and perceptions of the various stakeholders involved, especially the student and teachers. In the present study we developed an exploratory study from the point of view of the teachers-researchers. It also aims to get the perception of the students about the quality of teaching in this model. As methodology we developed this exploratory study, using bibliographic research and application of a structured questionnaire, seeking to identify the expectations and perceptions of teachers regarding the impact of the model based on the model of the teacher/researcher on the quality of higher education.
Keywords: *Higher Education, Teaching and Researcher model, Quality of Higher Education*

1. INTRODUCTION
The University is a living force of society that is subject to the constant changes of the very society in which it is inserted. On the other hand, it is an important agent of these modifications. To achieve this goal, it has to connect more and more with companies and other stakeholders, in order to fulfill its mission of training students for their future role in the market. This unstoppable movement has imposed in recent years an enormous pace of work and multiple demands on higher education teachers who, it happens, have to fulfill their mission as teachers (teaching) and trainers of young people for the integration of the world of work. To this end, the connection to the community and the relations with companies, economic and social organizations, public and private, in strict collaboration. In the words of Proença Garcia (Garcia, P. 2021) «a teaching with quality also passes through the degree of insertion of the Faculty in the surrounding environment, so that it can influence it for the better». This role of connection between the University and the market is also considered as a function of the professors. We can say, as Rui Proença Garcia (GARCIA, R.P.; 2001) that «the words about quality have long been written so what matters now is to stimulate each and every one to be in the process». At the present time the professor in higher education has the function of teaching, investigating and mastering the bureaucracy required by the accreditation procedures of the study cycles and the quality in general of the service provided by the University. Teacher, researcher, and bureaucrat, three distinct types of functions concentrated in a single job, remunerated with a single salary. The question is: has this system considered in some way the consequences arising from the poor quality of life of the professors/researchers/bureaucrats in the effective quality of higher education? The success of the University as a whole also depends on the adoption of internal quality systems that require from its professors an availability for scientific research, mirrored in scientific publications, on which depends the career of the professor himself and, more broadly, the accreditation of the study cycles, as well as the certification of the educational institution itself. But, did the system considered the natural limitations of human life for the academic professionals? Did it considered the possibility of this system keep away from the University the best of our human resources ro teatching?

In a word, the teacher in current higher education has a set of responsibilities to perform that make it very difficult to reconcile such a great task with his personal and family life with the demands imposed by his career as a teacher, researcher and burocrat. The academy is no longer an attractive career as it once was. This simple fact should be considered in any system of quality, as it is in other professions. In the words of Alberto Amaral «we are fully aware that the increase in quality passes first through all of us and only then through others. Waiting for someone to "decree quality" is a pointless and desperate wait.» (AMARAL, A.1992). We can agree with this statement, but 30 years after the beginning of this process we can see clearly the dark consequences of a system thought out without care about one of the principal stakeholder: the teachers. This topic, however, deserves a more prefund research. For now, we care to understand about the problem of imbalance between teaching and research (SPOOK, J.E & RAGHOEBAR, S.; 2022). The major changes experienced in higher education in recent years, due to European guidelines, internationalization, and globalization, require a thorough study on models of the evaluation procedures of higher education institutions (HEI's) especially in pedagogical issues and quality management models. An important factor concerns the expectations and perceptions of the various stakeholders involved, especially the student and teachers. More than 30 years after the beginning of this process we must do a balance to do the necessary changes and increase the quality process, to achieve a better University for all.

2. CONCEPTUAL TOOLS
In the present work we developed an exploratory study from the point of view of the teachers/researchers and, every day more, also bureaucrats. It also aims to get the perception of the students about the quality of teaching in this model. The present article offers a mixed-method perspective on the investigation of determinants of effectiveness in quality assurance at higher education institutions. We collected survey data from four higher education institutions and researcher network to analyse the degree to which teachers/ researchers perceive their approaches to quality assurance as effective. It is a very simple prior consultation with the ptofessores/invcestigadores to evaluate the intetresse of a possible inyernational research project on the matter. To understand the problem is important to analyse the context approaches and methods for quality assurance. The focus of this work is to try to understand whether the requirements imposed in the last two decades by the Regulatory Agency of Higher Education in Portugal have led, or not, to a reinforcement and improvement of the teaching-learning process and research for the quality of higher education. Process improvement is understood as anything that contributes to a better preparation of students for future integration into the labor market.

3. METHODOLOGY
As methodology this is an exploratory study, using bibliographic research and application of a simple structured questionnaire, seeking to identify the expectations and perceptions of teachers regarding the impact of the teacher/researcher model on the quality of higher education. The main objective is to understand if there is a problem that justifies a further investigation. Considering that the current higher education quality model is based on the guidelines defined by the EU, the problem does have a European dimension. Therefore, a first questionnaire was done, aimed to measure the sensitivity to the existence or not of a problem with dimension to trigger a broader research project. The aim is to prepare the basis for further research on the two essential parts of the quality system in Higher Education, it means quality in Higher Education Institutions (HEIs) and quality in the Teaching/Research process. For now, in this paper we approach the results of the 2nd part of the study about the quality in the teaching/research process.

It is a simple questionnaire with only four questions, namely:
- 1st) Was the current Teaching/Researcher model been well thought out?
- 2nd) Does it effectively improve student's preparation?
- 3rd) Is it a fair process for teachers and students?
- 4rd) Is this model attractive for young professionals / academics?
- 5th) What future for Higher Education? Is there a risk of moving towards to strong elitism in the HE?

With this questionnaire we intend to obtain answers that allow us to answer the two fundamental research questions:
- *1st) How to ensure the quality of Higher Education and overcome the imbalance between teaching and research?*
- *2nd) How can we ensure the functioning of Higher Education with quality and with poor salaries and high research metrics?*

The findings show some important guides to follow to ensure the quality and sustainability of higher education for future generation.

4. THE STATE OF ART IN PORTUGAL

The context approach leads to the guidelines imposed by European Authorities and their transposition for the Portuguese legal order. High Education sector is, of course, under the rule of law and the regulation imposed by a national regulatory agency (A3ES). The accreditation model for different studies cycles depends on teacher/research performance, the rresearch incentives, the teacher career progression, and the management performance of High Education Institution's (HEI's). In this field, some referenced authors point out the gap between public and private HEI's, worse operating conditions, absence of career guarantees, worse remuneration for its teachers and reduced investment in research (Amaral, A; 2023). Since the creation of the European Higher Education Area (EHEA), which stems from the Bologna Declaration (1999), fostering the comparability and recognition of qualifications has made higher education evaluation a priority in education policy. The situation in Portugal has had a remarkable evolution from the last decade of the 20th century. From an incipient and contested initial system of quality assurance set up in the late 20th century with the Law nº 38/94, of 21 November, higher education evaluation in Portugal has expanded rapidly, today boasting high-quality supervisory and consultancy services, no longer focussing merely on teaching-learning processes and results achieved but including an analysis of course organisation and operation and of research achieved. In 1998, by Decree-Law nº 205/98, of 11 July, the National Board for Higher Education Assessment (Conselho Nacional de Avaliação do Ensino Superior - CNAVES) was created, aiming to ensure the higher education system's "harmony, cohesion and credibility", using meta-evaluation and, if necessary, foreign experts. In 2000, the second evaluation cycle was completed, covering all higher education institutions (HEIs), however, according to the national Agency (A3ES), the process was contested and considered ineffective due to its considerable dependence on higher education institutions, not producing results in terms of eradicating cases of inferior quality. In 2005, the Portuguese government requested an assessment of the quality assurance system in Portuguese higher education from the European Association for Quality Assurance in Higher Education to offer recommendations for improvement and for the creation of a system that would comply with Standards and guidelines for quality assurance in the European Higher Education Area. A large step was done in 2007, with the new Law on Higher Education Evaluation, Law nº 38/2007, of 16 August, and the creation of the Agency for Assessment and Accreditation of Higher Education by Decree-Law nº 269/2007 of 5 November, with the main objective of promoting assessing and ensuring

quality higher education. Both the legal framework for higher education quality assurance (Law No 38/2007, 16 August) and its quality evaluation system are universal, compulsory, and frequent in nature. They require quality policies within the HEIs themselves; quality criteria being submitted to the standards stemming from the Bologna Process; assessment of R&D activities; participation of foreign experts in the evaluation process; student intervention, etc. As such, evaluation in higher education is considered clearly supervisory in nature. The objectives of higher education quality assurance are:
a) to improve the quality of HEIs.
b) to provide society with information on the HEI performance quality.
c) to promote an internal quality assurance culture within HEIs.

In 2012, the first regular accreditation cycle began. It consisted of a five-year evaluation and accreditation phase of all operating study cycles with preliminary accreditation. It was concluded in 2017/18 with the institutional assessment process, as part of the reconstruction of the higher education database. The aim was to provide a global vision of the system and an analysis of the improvements achieved in relation to the initial 2010 undertaking. This evaluation was a condition for A3ES's application to be included on the European Quality Assurance Register (EQAR). Thus, Portugal has a quality assurance agency that monitors policies, such as those that involve creating a strategy, with specific and measurable objectives, tied to social dialogue, focussed on equality, equity, and social aspects in higher education. According to Article 17 of Law nº 38/2007, of 16 August HEI's are obliged to institute an internal quality assurance policy for their study cycles, developing strategies, policies, and procedures for continuous quality improvement. These must be formally approved by the HEI's legally and statutorily competent body and made public, guaranteeing the participation of students and others interested in the process. The Agency (A3ES) quality assurance approach is based on an "external quality assurance" model, a combination of internal quality assurance system, self-assessment, and external evaluation, in which the HEI's internal monitoring and evaluation processes are analysed and used in the external quality audit and accreditation process. It is defined with the European standards and guidelines (ESG), transposed into national legislation that establishes educational institutions as those primarily responsible for the quality of the education provided. But the way HEI's adopt the internal procedures to achieve the quality goals are totally autonomous and they can define it in internal regulations. Every HEI is responsible for defining the internal evaluation model. Each has a duty to adopt a quality assurance policy for their study cycles, ensuring appropriate procedures, promoting a culture of quality and quality assurance, as well as developing and implementing a continuous quality improvement strategy. The conclusion is that internal quality assurance should be undertaken by HEI's as part of their autonomy and in accordance with their own regulations. It means that HEY's can easily transfer all bureaucracy of this system to the teachers' s functions, that assumed the great part of the system costs with damage to their wellbeing and main goal: teaching well.

4.1. Consequences of this model: imbalance between teaching and research
The quality system that we have briefly described has entailed a brutal increase in bureaucracy, multiple procedures that have mostly been handed over to teachers. As a result, they have seen their functions increase significantly, due to the bureaucracy associated with the processes and the redoubled research goals and obligations. In this way, the functions required of the teacher in higher education increased substantially, without reduction of teaching hours and with stagnation of salaries. In the last two decades being a teacher, at any level of education, has come to be seen as an unrewarding profession. The high demands of training and obtaining academic degrees is not accompanied with a compatible remuneration.

Throughout your professional life a teacher have to associate a research activity dominated by very demanding metrics and difficult to match with the more careful preparation of the lessons. It is a new reality that we can call «three jobs, one salary». Family and social life are forbiden or can not be normal. Some important human rights are being restraints (DOMARADZKI, S.et al; 2019). So, is not the so desired quality of education put in question? When we raise the question of the imbalance between the function of teacher and researcher we intend to understand how these two realities can and should be reconciled in order to guarantee, above all, the quality of teaching and the training of the new generations. Wouldn't these two functions be separated? Shouldn't research be a support for the advancement of teaching and, to that extent, should we not define in a totally clear and distinct way the profession of teacher and that of researcher? In order to determine if we have or not a problem it is important to gather the perceptions of those interested in this process. Let's look at the results obtained.

5. FINDINGS
The surveys were collected through contacts of a network of teachers and researchers without identification of HEI's. The questionnaire was totally anonymous. It was collected 66 answers in 90 invitations. The findings are presented by each question, as follow:

- 1st) Was the current Teaching/Researcher model been well thought out?
  - 93% Answered NO
  - 5% don't know /have no idea.
  - 2% answered YES
- 2nd) Does it effectively improve student's preparation?
  - 99% Answered NO.
  - 1% don't answered.
  - 0% answered YES.
- 3rd) Is it a fair process for teachers and students?
  - 67% Answered NO
  - 22% don't answered.
  - 11% answered YES.
- 4th) Is this model attractive for young professionals / academics?
  - 93% Answered NO.
  - 5% don't answered.
  - 2% answered YES.
- 5th) What future for Higher Education: Is there a risk of moving towards to strong elitism in the HE?
  - 3% answered NO.
  - 45% don't answered.
  - 52% answered YES.

The research is ongoing to approach other relevant topics in quality. The sample is small but allow to see the dimension of problem. Wider research into other EU countries is warranted and it is a good motivation to keep this topic as center of a bigger research about HE quality.

6. CONCLUSION
In view of what has been exposed, we can say that at a first look into the problem we find three possible reasons to dissatisfaction in teacher of HE: the imbalance between teaching and research is one of them. The other two reasons (not less important) are the excess of bureaucracy and, mainly, the frustration with results on high education of the students. At the end, the big question is: How can we improve quality and fair balance between teaching and research?

The principle of proportionality as an essential condition for the preservation of a fair game between all stakeholders: teachers, researchers, students, and institutions. This is a unique opportunity to reconsider the system and improve truly quality in HE, if not, in future, we will get a much more elitist system and that will be a dramatic step behind in «Higher Education for all». Far from exhausting the subject, this is only a modest contribution to reflection on something that we consider essential to guarantee the education system, democracy and social equity between generations.

LITERATURE:
1. AMARAL, A., PROBLEMAS NO ENSINO SUPERIOR: DEMOGRAFIA E EQUIDADE. Congresso Universidade Portucalense 14 de abril de 2023 https://wwwcdn.dges.gov.pt/sites/default/files/alberto_amaral_problemas_no_ensino_superior_universidade_portucalense_abril_2023.pdf
2. AMARAL, A. Editorial do Boletim da Universidade do Porto. Nº 2 (14) 1992. Porto
3. DOMARADZKI, S.; KHVOSTOVA, M.; PUPOVAC, D. *Karel Vasak's Generations of Rights and the Contemporary Human Rights Discouse.* Springer Nature *B.V,* 20 (4), p.424, 2019
4. GARCIA, R. P.; CUNHA, A. E CAMILO, A. Para um Ensino Superior de Qualidade. Revista Portuguesa de Ciências do Desporto, vol. 1, nº 1, 33–43, 2001. https://doi.org/10.5628/rpcd.01.01.33
5. SPOOK, J.E. & RAGHOEBAR, S. Achieving Balance Between Research, Teaching, and Service at Work. Chapter Book. 2021- https://link.springer.com/chapter/10.1007/978-3-031-10754-2_5#chapter-info
6. European Association for Quality Assurance in Higher Education (ENQA) Reports. 2016, 2017 et al.. https://www.enqa.eu/
7. A3ES documents and Reports. https://www.a3es.pt

INSIGHTS ON THE MAIN DRIVERS OF BUSINESS RESILIENCE, ON THE CONTEXT OF GLOBAL CRISIS - A SURVIVAL ANALYS MODEL PERSPETIVE WITHIN EX-COMMUNIST EUROPEAN ECONOMIES

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ABSTRACT

The dynamics on the economic environment has suffered significant downwards, especially under the negative impact of the recent COVID 19 pandemic. Even if this period is not yet perceived similar with the global financial crisis from 2008-2009, we raise the concern on the higher risks of firms' bankruptcy. For this purpose, we proceed in this study to analyze main factors that could influence firms to reach high probability of bankruptcy, both firm level and public policy related ones. The analysis is focused along the period 2018-2022, considering mainly financial ratios as input data for estimation of a survival analysis model and designed econometric models. Several tests of robustness are performed to understand countries' and industries' specific, on the equation of firms' business models resilience. The focus on the analysis is directed to the ex-communist European countries. With this study we bring insights on future lessons learn, both within public and firm level decision-making stakeholders, showing how important is the revision of current business models into more resilient ones, with focus not only on earnings management topics, but attention given to sustainability perspectives as well. We emphasize as well that such transition to ESG based business models should be properly supported by public authorities, through various forms of incentives and strength of the institutional framework.
Keywords: *financial distress, financial resilience, COVID 19, sustainability*

1. INTRODUCTION
Nowadays there is a global awareness on the high level of economic uncertainty, which leads to numerous questions not yet answered concerning the extremely complex concept of resilience. The COVID 19 pandemic crisis has determined both governments and private sector to change their mindset on how to perceive the economic environment and therefore, how to assess, design, implement and monitor public policies and firms' strategies and policies aimed

to cope with the shocks generated by significant disruptions along the supply chains (Alessi et. al., 2020). The multiple facets of the economics of the COVID 19 pandemic crisis have emphasized fundamental changes on the macroeconomic and firm level key performance indicators, both related to economic growth premises, changes to the labor markets, changes to consumption function, or even changes to the awareness of the need of aligning the structure of national economies or the business models to the core principles of sustainable growth (Brodeur et. al., 2021). As the business environment is changing dramatically from period to period, firms should approach the corporate resilience through a dynamic perspective, which consist mainly on proving additional dynamic capabilities aimed to allow firms to develop the competencies on the area of anticipation, coping and respectively adaptation (Paeffgen, 2023). This way firms could review the possibility of decentralization in decision-making, higher level of formalization, support of a more robust corporate culture and establishing of collaborative partnerships. Henceforth, firms would become more agile, flexible and adaptable (proactive and reactive as well) to the corporate environment (Schilke et. al., 2018). The final expected output is that firms achieve to learn the ability to absorb shocks and ensure business continuity, to develop robust governance framework, innovate and search for response to disturbances. In this study we try to address the problem of corporate financial resilience, in the light of the recent overlapping crisis, respectively the COVID 19 pandemic and the energy crisis. This topic is essential as firms have received discretionary access to financial resources during COVID 19 pandemic crisis, which has given some of them the chance to avoid, or at least reduce the negative effects of the crisis, because they have proven prior COVID 19 pandemic, to be profitable before COVID 19 pandemic, to work with high quality human capital factor, or that they developed their social capital, in order to secure their supply chains (Amin & Viganola, 2021). However, there is still insufficient literature addressing the topic of defining the concept of financial resilience, as researchers' focus was rather on discussions around individuals' financial resilience, or macroeconomic financial resilience (Salignac et. al., 2019). This financial dimension of the business resilience has proved to be essential on the current context of economic uncertainty, as financial resources required by firms to provide a prompt and effective response to shocks in the business environment are accessible to firms differently, highly dependent on firms' antecedents (capabilities), firms' processes and firms' outcome. Sustainable balance between production and sales, access to reliable supply chains, management ability to drive firms adapting to a changing environment continuously, or the alignment to regional, sectorial and social evolutionary particularities, represent essential factors for firms to ensure financial resilience (Zahedi et. al., 2022). On this research, the measure considered for the level of firms' financial resilience is related to the probability of corporate financial distress. The concept of financial resilience represent a complex construct, defined through multiple dimensions such as, the economic dimension reflecting corporate financial resources, the financial dimension describing firm's access to financial resources on the capital markets, managerial ability emphasizing managers' financial literacy, strategic vision and proactive behavior in addressing potential risks and vulnerabilities, or even a sustainability pillar designed to address investors' expectations in terms of sustainable economic growth. Our choice is related to the fact that the financial distress scoring models capture an assembly picture of both firms' financial position and financial performance. Through this research, we assess as well the relevance of firms' financial stability and organizational sustainable growth on the evolution of firms' financial resilience, in the light of the recent crisis the international business environment has faced with, along the period 2019-2022. The focus of the research is on the ex-communist countries, choice which is mainly based on the similarities on the structure of the economies, institutional framework and culture. Henceforth, our aim is to raise concern on the essential role that sustainability should play on the Eastern European region area, especially in the current context that emphasize governments

and firms' efforts to redesign their policies and business models in order to achieve business resilience. So far, there is insufficient literature addressing this topic in case of emerging economies, especially when discussing about financial resilience.

2. LITERATURE REVIEW
2.1. Definition of corporate financial resilience
There is long debate around the concept of business resilience, especially with reference to its component of organizational resilience. So far, the concept of corporate financial resilience is not sufficiently addressed in the literature. Most of the papers refer to financial resilience when addressing financial issues public institutions face with, especially in the area of banking system (Alessi et. al., 2020). There are also studies that review the financial resilience on individual-level, that look for the degree of individuals' financial exclusion from the access to financial resources, from the perspective of an array of individual characteristics, such as the financial literacy, personal debt management, or even social connections (Salignac et. al., 2019). Additionally, there are studies that review the financial resilience on households level (McKnight & Rucci, 2020). Sreenivasan & Suresh (2023) outline that there is a difference between firms' financial resilience and organizational resilience, suggesting that between the two components of the business resilience there is a strong connection that can be strengthen as long as firms address adequately their risk and vulnerabilities through digital financial innovation, liquidity planning, debt management, customer management, mitigation of supply chain disruptions, cyberthreats addressing, social capital development, business continuity plan implementation and stress testing, regular review of going concern, or through a CFO strategic approach of business leadership. The concept of corporate financial resilience is only partially addressed by Zahedi et. al. (2021), who have emphasized the most relevant factors for financial resilience of business models. This corporate resilience component is essential as firms could improve their resilience capabilities mainly through external financing. Instead, credit institutions grant such funds only in case firms commit and achieve several contractual conditions translated into different debt covenants. Those debts covenants are mainly financial indicators that are more or less incorporated in the various forms of financial distress models, which highlight the importance of firms' financial distress premises. Therefore, the role of the management becomes essential, supported by the effectiveness of business processes maturity. That is why firms should look both for organizational resilience and financial resilience as well. As there is lack of literature discussing a robust framework for financial resilience measurement, the researchers have adopted different approaches on operationalizing the concept (Razaei Soufi et. al., 2023). Most studies that have assessed the effect of the recent crisis on corporate financial resilience have narrowed their scope to the analysis of financial ratios calculated based on financial statements, or based on information disclosed by capital markets, looking mainly for variations on a large range of financial performance indicators and therefore firms' financial stability, translated in some papers as financial sustainability (Gleißner et. al., 2022). Concerning the relation between corporate financial resilience and corporate sustainability, we note that several recent studies have emphasized this relation became stronger along the last decade, as a consequence of the global efforts of achievement of SDGs, with innovation in its moderating and mediating role (Ryan & Irvine, 2012). Therefore, it is essential to understand further if alignment of business models to corporate sustainability frameworks leads to an improvement on the level of corporate financial resilience. It is also important to understand if the this transition generate indirect effect as well, as the link between firms' financial resilience and firms' organizational resilience is moderated (mediated) by the alignment to sustainability framework, reflecting this way synergy effects between the different components of the business models (Miceli et. al., 2021; Zupancic, 2022).

2.2. Financial distress during COVID 19

The COVID 19 pandemic has generated negative effects around the world, through different transmission channels, such as the reduction in consumption, the adjustments (shocks) on the capital markets and related contagion effects, or the disruptions in the supply chains (Brodeur et. al., 2021). Indirectly, these adjustments have led to subsequent social negative consequences on the labor market, generating deterioration of individuals financial inclusion, increase of psychological stress, or exclusion from public health services provided (Brodeur et. al., 2021). On these circumstances, during the COVID 19 pandemic, not all firms were able to find adequate solutions for coping with the adverse events, especially the small and medium size ones. As investors and credit institutions have decreased their risk aversion, there have been created serious issues on ensuring access to all firms financing their capital needs during the crisis, generating significant inequality between big firms and small firms (Amin & Viganola, 2021; Miklian & Hoeschler, 2022). Preliminary evidence outline a significant decrease on firms financial performance worldwide during the COVID 19 pandemic crisis (Apedo-Amah et. al., 2020; Hu & Zhng, 2021; Khan, 2022; Archanskaia et. al., 2023). However, the relevance of corporate financial resilience proves to be again a leading factor on controlling partially the amplitude of the negative adjustments generated by this crisis, as firms' performance adjustments are less pronounced in countries with better healthcare systems, more advanced financial systems, more effective institutional frameworks, or higher aversion to economic uncertainty (Apedo-Amah et. al., 2020; Hu & Zhang, 2021; Almustafa et. al., 2023). Traditional approach of financial distress analysis is linked to the assessment of corporate financial resilience, as it provide the preliminary financial health premises for firms, through indicators such as cash-flow volatility, firm leverage, return on assets, return of equity, or the well-known Z-score (Golubeva, 2021; Hu & Zhang, 2021; Khan, 2022; Almustafa et. al., 2023; Archanskaia et. al., 2023). Overall, the literature aligned to two major financial data-driven factors, respectively firms liquidity and firms leverage which seem to play an essential role on ensuring firms stability and sustainability on long-run, with implications on firms financial resilience. Additionally, studies analyzing the evolution of business failures, there is clear evidence that SMEs failures have increased during the COVID 19 pandemic period, however with significant heterogeneity in the rate of failures both across sectors, and across countries based on both firm profitability, firm liquidity and production and sales equilibrium (Gourinchas et. al., 2020). In order to signal positively on the capital markets, firms proceed to earnings management in times of crisis, including in case of the COVID 19 crisis, when managers adjust the level of discretionary accruals in order to smooth the level of earnings reported, no matter the country institutional framework (Lassoued & Khanchel, 2021). Therefore, firms try to deter the value relevance of different debt covenants, in order to keep their level of financial distress, and indirectly their level of financial resilience. The issue is that those accruals reverse overtime, which means part of the negative effects generated by COVID 19 pandemic could be observed only on a medium and long-run analysis. Instead, as of our current knowledge, there is a lack of studies analyzing the relevance of sustainability performance of firms on the level of financial distress, and implicitly on firms' financial resilience. On those circumstances, we look on this study for the influence of both the dimensions of earnings management and corporate sustainability on the level of firms financial distress, in order to have a preliminary understanding on the premises (antecedents) created by COVID 19 on firm level which represent the starting point for firms to find solutions for improvement of the financial resilience.

3. METHODOLOGY RESEARCH

The main objective of this study is to assess the relevance of both financial drivers and sustainability drivers on the perspective of firms' financial distress, which has fundamental

implications on firms' resilience on a medium to long term. For this purpose we have performed three levels of analysis. The first level of analysis looks for changes on the discriminant zone for each firm analyzed. The second level of analysis tries to understand a hierarchical relevance of the various drivers on how firms are classified on the different discriminant zone prescribed by Altman (1968) model. The last level of analysis look for the marginal effect of each driver included in the econometric models estimated on the possible change from one discriminant zone to another. The analysis considered in the study is mainly performed using quantitative research methods. The data considered in the study were extracted from Refinitiv database. The period analyzed is related to 2019-2022, so that we capture the impact of COVID19 impact on our analysis. As there is insufficient literature on addressing the topic of firms' financial resilience in case of emerging economies, through the analysis of the probability of financial distress we have narrowed our research to Eastern Europe countries, all of them ex-communist countries. Therefore, we selected countries with various similarities, among which we remind the level of economic development, the level of capital markets capitalization, institutional framework etc. The sample consist of 357 firms for which we have available data from Refinitiv database, summing-up a total of 1428 observations. The majority of the observations related to firms with headquarters in Poland (49.58%), followed by Russia (15.69%), Romania (9.24%), Bulgaria (7.84%), Croatia (5.88%), Hungary, Slovenia, Serbia, Czech Republic, Macedonia, Bosnia and Herzegovina, Montenegro and Slovak Republic. Therefore, for the first step of analysis, we have performed an exploratory statistics analysis to check if relevant census data for survival analysis exist. The second step of analysis consist of the estimation of a regression (CRT) decision tree designed to provide insightful information for our analysis concerning the hierarchy of the drivers of the risk of financial distress included on the research design. The last step of analysis refers to estimation of a ordinal regression econometric model, that allows us to review how the drivers included on the study could lead to a change in the discriminant zone for each firm. As noted in the previous section, the concept of financial resilience is not sufficiently defined. However, it is defined based on a multidimensional perspective. One such dimension refers to firms financial stability, which addressed directly the topic of firms' financial distress and how relevant is this score for firms to procure capital at optimal cost of capital in advantageous conditions. As firms' level of financial distress is many times considered by financial institutions as part of the debt covenants framework, we consider useful to review the evolution of this indicator during COVID 19 pandemic. For this purpose we considered a measure of financial distress the Altman (1968) model. The choice for the Altman score is supported by the literature, as this model seems to be valid in the regional context of the research, and reasonable prediction accuracy level, no matter the effects of countries' particularities (Altman et. al., 2017). The Z-score was extracted directly from Refinitiv database, without any manual calculation from our side. The main issue of financial distress score models is that they describe mainly a static image of firms' financial health and does not consider the larger context of the industry of national economy (Altman et. al., 2017). On this direction we have considered in the analysis the factors describing earnings quality, from the perspective of StarMine EQ model developed by Refinitiv (Refinitiv, 2021). Considering the variables calculated by Refinitiv on the estimation of this model, we incorporate into our analysis an improved image of firms' financial health, including here the value of accruals, the value of free cash-flows and the value of the operating efficiency. Therefore, firms' financial ability to generate financial resources that cover their debt contractual obligations, which is incorporated in our analysis, provide relevant information concerning both the predictability and accuracy of earnings reported. Additional to the literature, we add to the conceptual research framework the dimension of firms' sustainability which is defined by the ESG dimensions, respectively the environmental, the social and the governance dimension. This way, we plan to assess the relevance of firms' sustainability on improving firms' financial

distress. As the literature has pointed mixed results concerning the financial implications of transition to sustainability business models, we address this topic in discussion, but this time analyzing a sample of firms operating in emerging economies, which are significantly different from the highly developed economies, both from the perspective of cross-country or industry specific factors. The last element of the conceptual research framework refer to the beta variable, which reflect the association between firms' stock price evolution and capital markets evolution, emphasizing the systemic risk firms are exposed to. Including this variable in the analysis comes from the assumption that firms strongly linked to the capital markets evolution determine higher pressure on management team to address investors' concerns about the realizability of investors' expectations.

4. RESULTS AND DISCUSSION
4.1. Overall exploratory analysis
In Table 1 we summarize the main descriptive statistics on the variables considered in the research design. The results show significant heterogeneity along the sample analyzed concerning the financial distress level, with a mean of 3.87, which suggest low chance of financial distress, especially in the first two years. However, there are firms with extremely low Z-score (-88.26), meaning high risk of financial distress in the next year, or firms with a high Z-score (91.15), which indicate low probability of firm bankruptcy for the next period. Therefore, there are firms that seem to face prior to COVID 19 pandemic period issues concerning the high probability of bankruptcy, whereas others have proven financial resilience. To reflect better the level of financial distress of firms analyzed, in Figure 1 we outline better the results of classification of the firms on one of the three discriminant zones prescribed by the Altman (1968) model. Based on this classification, we observe that there is a probability of bankruptcy of 95% for the first year, for 35,38% of them, where as a probability of bankruptcy of 70% for the first two years is identified in case of 18.78% of those firms. Additionally, we observe a relative heterogeneity among firms in terms of financial distress, as there are several firms with z-score values that are outliers. In terms of financial stability, we have considered for analysis two levels of analysis. First level consist of the analysis of the Piotroski F-Score, designed to evaluate firms' financial health (Walkshäusl, 2020). Interesting is that the mean of 4.44 indicate firms do not face serious financial issues along the COVID 19 pandemic period. The sample seem to be heterogenous with a low standard deviation of 1.43, which could suggest that firms' financial health is not significantly impacted by along the period analyzed. However, this results should be cautiously perceived, as this Refinitiv database score represent an average of the score for the last 5 years, respectively period 2018-2022. This result could suggest that the economy has recovered from the COVID 19 pandemic. Similar indication is provided by the mean standard deviation on revenue growth, which shows firms' revenue mean variation along the period analyzed was about 25%, which shows relatively stable sales.

Variable	Valid obs.	Mean	St. dev.	Min.	Max.	Percentiles		
						1st	2nd	3rd
Z-score	1.428	3,87	9,59	-88,26	91,15	1,30	2,40	4,28
F-score	1.428	4,44	1,43	0,00	8,00	3,00	5,00	6,00
Beta	1.373	0,70	0,67	-3,01	4,04	0,34	0,67	1,02
ESG Score	129	47,12	16,32	4,95	82,33	35,17	47,19	57,76
Accruals	924	53,85	28,97	1,0	100,0	30,0	55,0	79,0
Cash Flow	1.091	54,68	27,92	1,0	100,0	33,0	56,0	79,0
Operating Efficiency	1.200	53,81	28,28	1,0	100,0	30,0	57,0	77,0
Revenue Growth std	1.246	0,25	0,01	0,00	3,20	0,08	0,17	0,31

Table 1: Descriptive statistics
(Source: authors' calculation with SPSS 19.0)
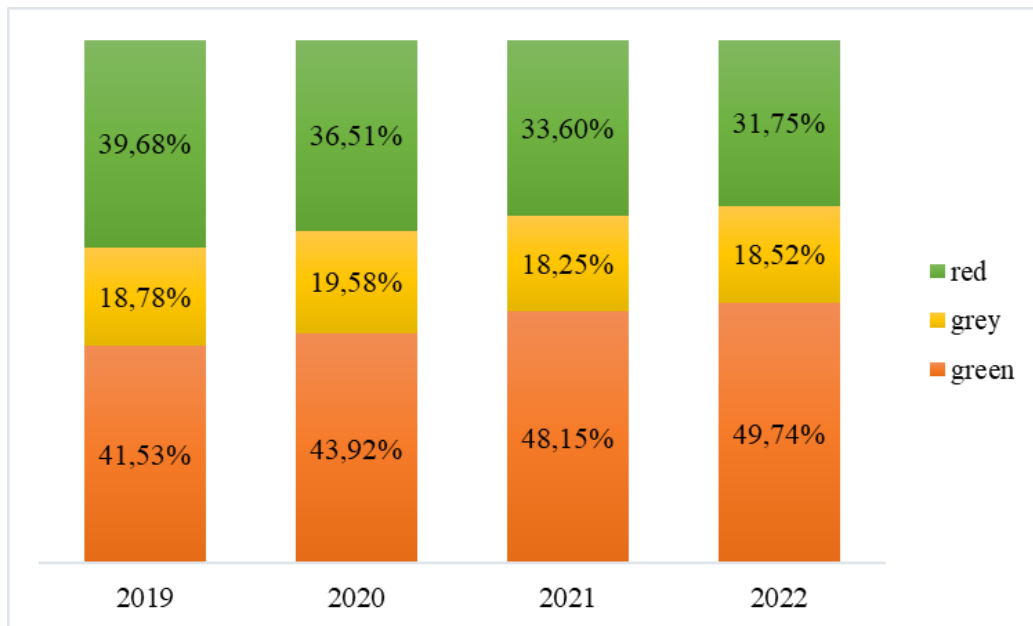
Figure 1: Class distribution on financial distress score
(Source: authors' projection, based on Refinitiv data)

We continue our analysis on the financial analysis, by evaluating the sustainability of the economic growth perspectives. Therefore, we analyze the quality of the earnings reported though the StarMine earnings quality model dimensions, respectively the accruals component, the cash-flow component and respectively the operating efficiency component. The results describe moderate level of rankings related to all those dimensions. The moderate level of accruals ranking, for firms analyzed, suggest us earnings reported are slightly affected by accrual-based earnings management techniques, as they are placed in the middle of the StarMine EQ model classification. However, there is a reasonable level of cash flow component as well, which could indicate a more conservative approach on the accruals accounting estimates along the period analyzed., or a reversal of the accruals created during COVID 19 pandemic, so they do not reflect anymore on the 2022 financial statements. The firms analyzed show heterogeneity in terms of exposure to capital markets dynamics, indicating that systemic changes on the capital markets lead to a change of 7% in firms' stock market prices. Therefore, those firms listed on emerging capital markets, are not significantly affected by the evolutions on the capital markets generated especially on the firs period of the COVID 19 pandemic period. The mean of 47.12 of the ESG score highlight that firms analyzed are not yet persistently involved on the redesign of the business models towards sustainable growth business models. However, the firms seem to differ slightly, differentiation being mainly driven, either by country public policies or regional industry specific on this area.

4.2. Analysis on drivers influencing the risk of financial distress

In order to have a better understanding of the effects of the different drivers mentioned above on the probability firms face with financial distress, therefore financial resilience issues, we have performed three levels of analysis. The first level of analysis looks for changes on the discriminant zone for each firm analyzed. When preparing the data for a survival analysis regression estimation, we have observed that along the period analyzed, no firm has changes its zone of financial distress risk. The second level of analysis tries to understand a hierarchical relevance of the various drivers on how firms are classified on the different discriminant zone prescribed by Altman (1968) model. For this purpose we provide in Figure 2 the regression tree estimated obtained.

Figure 2: CRT regression tree representation
(Source: authors' projection with SPSS 19.0)

All these observations highlight that lower level of variation in revenue could affect firms' financial stability, only as long the firm is comping as well with issues of lower level of operating efficiency. Additionally, it is essential to understand that higher level of operating efficiency is positively influenced by influenced by accruals level, with direct implications on firms' risk of financial distress.

Table following on the next page

Driver		Model	Model	Model	Model
Threshold Class = green		-0.139**	-1.330*	-1.185*	-5.815*
		(0.057)	(0.214)	(0.222)	(1.571)
Threshold Class = grey		0.688*	-0.365***	-0.198	-4.422*
		(0.060)	(0.209)	(0.217)	(1.507)
Revenue variation		-0,017	-	-0,022	0,897
		(0,025)		(0,089)	(0,998)
Accruals		-	0,012*	0,012*	0,022**
			(0,003)	(0,003)	(0,010)
Cash Flow		-	-0,007*	-0,005**	-0,016
			(0,003)	(0,003)	(0,013)
Operating Efficiency		-	-0,024*	-0,024*	-0,062*
			(0,003)	0,003	(0,014)
Beta		-	-	-	-0,534
					(0,739)
ESG score		-	-	-	-0,017
					(0,016)
Model validation					
Pseudo R-squared	Cox and Snell	0,002	0,152	0,151	0,411
	Nagelkerke	0,003	0,174	0,173	0,466
	McFadden	0,001	0,079	0,079	0,248
Goodness-of-Fit test	Chi-Square	2,8261	136,12	126,67	46,52
	Df	1	3	4	6
	Sig.	0,093	0,000	0,000	0,000
Likelihood Ratio Tests	Chi-Square	1872,8	1664,4	1551,7	153,65
	df	963	1643	1538	168
	Sig.	7E-61	0,351	0,3981	0,7792

Table 2: Ordinal regression model estimation
(Source: authors' estimation with SPSS 22.0)

The final level of analysis look for the marginal effect of each driver included in the econometric models estimated on the possible change from one discriminant zone to another. In Table 2 we summarize the statistics for the ordinal regression models estimated. The models estimated are statistically significant (p value<0.05), however with a relatively low pseudo R-square. Overall, the results show that possible change from one discriminant zone of financial distress risk to another is significantly impacted by the measures of firms' financial performance and earnings quality. Therefore, in increase in the level of accruals could lead to improvement on the class risk of financial distress, based on the positive association of the discriminant zone with firms' ranking on accruals quality. These results suggest that earnings management still remain a solution for some managers to transmit positive signals on the capital markets, especially to the credit institutions, as they adjust different debt covenants in order to avid possible changes on debt contracting conditions. Instead, the results show that the higher firms' ranking on cash flow the lower would be the chances for the firm to change its risk class of financial distress. This results could be justified by the design of the discriminant function score itself, which does not look on the level of cash flow firms report. Therefore, higher level of working capital incorporated in the Z-score model would lead to lower firms' financial distress. Instead, higher changes on the working capital, that are more or less reflected on firms' cash flows, could translate into a deterioration of the level of the operational activity, including with impact on firms' sales, accounts payables, or inventory management.

5. CONCLUSION

The main purpose of the study was to review the relevance of firms' financial stability and sustainability on its financial resilience degree. This topic is of high interest on the recent context of overlapping crisis, such COVID pandemic crisis, or the energy crisis. The reason if given by the fact that in times of crisis, firms report negative effects of crisis on financial performance, therefore deterioration of their financial health. This deterioration determined negative implications on its possibilities to borrow capital for projects aimed to allow them coping and adapting to the new business environment. Among the main financial analysis indicators used to analyze the degree of firms' financial exclusion from capital markets is the probability of financial distress, which in our study is measured by the Altman Z-score. The research design is built so that we evaluate the association between firms' financial distress degree and earnings quality ranking, financial stability and corporate sustainability raiting. The resuls of the analysis, perfomed on a sample of firms operating in ex-communist Eastern European countries, suggest that the quality of earnings reported is essential for evaluation of firms' financial distress, and subsequently firms' financial resilience. The main drivers from this perspective are noted to be the level of corporate accruals and respectively the level of operating efficiency, calculated based on the Refinitv StarMine EQ model. Additionally, the results outline that along the COVID 19 pandemic crisis, the efforts firms make to redesign their business models towards sustainability frameworks do not impact significantly firms' financial distress degree. However, there are several cavets of our research, among which we remind the small sample of firms analyzed, the limited range of geographical region covered by the analysis, and the small number of independent variables included in the econometric model estimated, including the fact that the concept of financial stability and the concept of corporate sustainability are resumed to simple contructs, such as firms' revenue stability and firms' corporate ESG score.

LITERATURE:

1. Alessi L., Benczur P., Campolongo F., Cariboni J., Manca A.R., Menyhert B., Pagano A. (2020), *The Resilience of EU Member States to the Financial and Economic Crisis*, Social Science Research, 148: 569-598, https://doi.org/10.1007/s11205-019-02200-1;
2. Almustafa H., Nguyen Q.K., Liu J., Dang V.C. (2023), *The impact of COVID-19 on firm risk and performance in MENA countries: Does national governance quality matter?*, PlosOne, 18 (2), e0281148, https://doi.org/10.1371/journal.pone.0281148;
3. Altman E.I., Iwanicz-Drozdowska M., Laitinen E.K., Suvas A. (2017), *Financial Distress Prediction in an International Context: A Review and Empirical Analysis of Altman's Z-Score Model*, Journal of International Financial Management & Accounting, 28 (2): 131-171, https://doi.org/10.1111/jifm.12053;
4. Amin M., Viganola D. (2021), *Does Better Access to Finance Help Firms Deal with the COVID-19 Pandemic? Evidence from Firm-Level Survey Data*, Policy Research Working Paper Series 9697, The World Bank;
5. Apedo-Amah M.C., Avdiu B., Cirera X., Cruz M., Davies E., Grover A., Iacovone L., Kilinc U., Medvedev D., Maduko F.O., Poupakis S., TorresJ., Tran T.T. (2020), *Unmasking the Impact of COVID-19 on Businesses Firm Level Evidence from Across the World*, Policy Research Working Paper Series 9434, The World Bank;

6. Archanskaia E., Canton E., Hobza A., Nikolov P., Simons W., (2023), *The Asymmetric Impact of COVID-19: A Novel Approach to Quantifying Financial Distress across Industries*, European Economic Review, ahead-fo-print, https://doi.org/10.1016/j.euroeco rev.2023.104509;

7. Brodeur A., Gray D., Islam A., Bhuiyan S. (2021), *A literature review of the economics of COVID-19*, Journal of Economic Surveys, 35 (4): 1007-1044, https://doi.org/10.1111/ joes.12423;

8. Gleißner W., Gunther T., Walkshausl C. (2022), *Financial sustainability: measurement and empirical evidence*, Journal of Business Economics, 92: 467-516, https://doi.org/10.1007/ s11573-022-01081-0;

9. Golubeva O. (2021), *Firms' performance during the COVID-19 outbreak: international evidence from 13 countries, Corporate Governance*, 21 (6): 1011-1027, https://doi.org/ 10.1108/CG-09-2020-0405;

10. Gourinchas P.O., Kalemli-Özcan S., Penciakova V., Sander n. (2020), *COVID-19 and SME Failures*, FRB Atlanta Working Paper 2020-21, Federal Reserve Bank of Atlanta;

11. Hu S., Zhang Y. (2021), *COVID-19 pandemic and firm performance: Cross-country evidence*, International Review of Economics & Finance, 74: 365-372, https://doi.org/ 10.1016/j.iref.2021.03.016;

12. Khan S.U. (2022), *Financing constraints and firm-level responses to the COVID-19 pandemic: International evidence*, Research in International Business and Finance, 59: 1-15, 101545, https://doi.org/10.1016/j.ribaf.2021.101545;

13. Lassoued N., Khanchel I. (2021), *Impact of COVID-19 Pandemic on Earnings Management: An Evidence from Financial Reporting in European Firms*, Global Business Review, https://doi.org/10.1177/09721509211053491 ;

14. McKinght A., Rucci M. (2020), *The financial resilience of households: 22 country study with new estimates, breakdowns by household characteristics and a review of policy options*, CASE Papers /219, Centre for Analysis of Social Exclusion, LSE.

15. Miceli A., Hagen B., Riccardi M.P., Sotti F., Settembre-Blundo D. (2021), *Thriving, Not Just Surviving in Changing Times: How Sustainability, Agility and Digitalization Intertwine with Organizational Resilience*, Sustainability, 13 (4): 1-17, 2052, https://doi.org/ 10.3390/su13042052;

16. Miklian J., Hoeschler K. (2022), *SMEs and exogenous shocks: A conceptual literature review and forward research agenda*, International Small Business Journal, 40 (2): 178–204, https://doi.org/10.1177/02662426211050796;

17. Paeffgen T. (2023), *Organizational Resilience during COVID-19 Times: A Bibliometric Literature Review*, Sustainability, 15 (1): 1-29, 367; https://doi.org/10.3390/su15010367;

18. Razaei Soufi H., Esfahanipour A, Shirazi A.M. (2023), *A quantitative measure of financial resilience of firms: Evidence from Tehran stock exchange*, Scientia Iranica, 30 (1): 302-317, https://doi.org/10.24200/sci.2021.55845.4433;

19. Ryan C., Irvine H. (2012), *Not-For-Profit Ratios for Financial Resilience and Internal Accountability: A Study of Australian International Aid Organizations*, Australian Accounting Review, 22 (2): 177-194, https://doi.org/10.1111/j.1835-2561.2012.00163.x;

20. Salignac F., Marjolin A., Reeve R., Muir K. (2019), *Conceptualizing and Measuring Financial Resilience: A Multidimensional Framework*, Social Indicators Research, 145: 17-38, https://doi.org/10.1007/s11205-019-02100-4;

21. Schilke O., Hu S., Helfat C.E. (2018), *Quo Vadis, Dynamic Capabilities? A content-analytic review of the current state of knowledge and recommendations for future research*, Academy of Management Annals, 12 (1):390-439, https://doi.org/10.5465/ annals.2016.0014;

22. Zahedi J., Salehi M., Moradi M. (2022), *Identifying and classifying the contribution factors to financial resilience*, Foresight, 24 (2): 177-194, https://doi.org/10.1108/FS-10-2020-0102;

23. Zupancic (2022), *Systematic Literature Review: Inter-Relatedness of Innovation, Resilience and Sustainability - Major, Emerging Themes and Future Research Directions*, Circular Economy and Sustainability, https://doi.org/10.1007/s43615-022-00187-5.

THE RELATIONSHIP BETWEEN CRISES IN THE WORLD OF FINANCE AND NEUROECONOMICS

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ABSTRACT
The Relationship between Crises in the World of Finance and Neuroeconomics, which has a very important place in terms of the sustainability of economics, is closely related to all actors playing a role in the economy in terms of sustainable growth. In order to deal with the relationship between the Crises in the Financial World and Neuroeconomics, certain topics should be addressed first and the study should be handled holistically after these topics are completed. Because the integrity of the subject is provided by synthesizing and bringing together two economically different concepts and by means of the discipline of economics, psychology and sociology, in terms of cause and effect relationship. The crisis group, which we describe as financial crises today, is one of the most important factors in terms of macroeconomic indicators. The relationship between the Crises in the World of Finance and Neuroeconomics is based on not neglecting the psychological aspects of this recent development. Because in a globalizing world, sustainability includes an economic system that includes sociology and psychology. This situation emerges as an issue that should not hinder Turkey's mostly taking precautions, developing policies and even economic freedom. As a result, the economic structure should be carefully examined, the globalizing world should be kept up, and economic evaluations and measures should be based on these principles.
Keywords: Financial World, Crises, Neuroeconomics, Türkiye, World

1. INTRODUCTION
In economic meaning, the relationship of financial crises that are subject of many studies and neuroeconomics is the focus point of economy in terms of financial sustainability. The study in this direction includes a study directed to the effect of financial crises on the area of neuroeconomics. If necessary to briefly mention about it, macroeconomic instabilities arising in Turkey and the world, as long as actions are not taken and removed, lead to financial crises. As a result of this case, financial markets become quite sensitive, and economic structuring is convicted to a ground ready to crisis. Especially, in the developing countries, financial support that is necessary to meet the production and distribution of social goods, and difficulties to undertake the weights of development cause fluctuations in economic and financial structure from time to time. These fluctuations of interest, beside the counties surviving as developing countries, largely affect the countries that have friendly economic relationships with these countries as well. In this context, especially the causes of economic and financial crises have had an important place in economic literature in terms of understanding stimulants of crisis, developing policy and forming a comprehensive subject area. This relationship actualizing between two scientific branches is a subject, which has been continuously repeated since the

oldest age of science history and, in the recent years, and which has become a current issue upon that economists have also utilized the science of psychology. This case has begun to modify the structure of economic models, which ignore psychological factors and consider economic individuals as rational creatures that can only make rational decisions. In this meaning, the science of neuroeconomics has appeared and rapidly developed in the recent periods. When financial markets are examined, in certain periods, due to the different reasons, it is seen that some crises were experienced. One of the most important reasons for financial crises that have a large scale effect is speculative attacks. Regarding that how and in what way speculative attacks occur, meaningful and logical findings could not be obtained until now. As a result, as a new discipline to make meaningful formation of attacks, neuroeconomics emerged. Neuroeconomics aims to make investment decisions and understand investor behaviors by means of cerebral waves, "*combining the scientific branches of neurology, psychology and economics*" (Altınırmak and Eyüboğlu, 2016:67-69). Three main reasons appeared associated with uncertainty in the face of financial crises in historical period. The first of these is seen that many factors belonging to the next periods as uncertainties not accountable risks. The second reason of financial crises is behaviors of economic individual (homoeconomicus). The third and last reason of financial crises is "evolution theory" experienced in financial world. Although the philosophers of neoliberal economics assume that people are rational and think of their interests and that they make free market economy on the idea that as long as individuals are not rewarded or not exposed to punishment, they cannot perfectly perform anything, neuroeconomics challenges these assumptions. As a result, in this global process we are in, in the triangle of genetics, psychology and neurology, that economic individual exposes to positive and negative affect will likely actualize. Because neuroeconomics will be a determinative element was proved as a result of that it was begun to be included in economic analyses. The aim of this study is the crises experienced in financial world and evaluating these crises in terms of neuroeconomics. In the view point of subject integrity, in the first section, after examining the concept of crisis and its features, economic crisis, sorts of economic crisis, crises of financial sector, sorts of financial crisis, financial crisis models, crises experienced in financial world and policies directed to preventing crises in financial world, neuroeconomics will be examined; in the second section, the relationship of crises with Turkey and the world; in the third section and neuroeconomics and evaluating financial crises from economic point of view in the fourth section. In the conclusion section, the subject will be integrally evaluated and interpreted.

2. FINANCE WORLD AND CRISES

Financial crises forming a main dynamic in terms of sustainability of economic system and the concept of neuroeconomics have an quite important place in terms of economic literature. Because the development, transformation and future of economics will be shaped in the framework of crises and the concept of neuroeconomics. In this meaning, in the first section, the crises experienced in finance world will be explained together with certain concepts and descriptions and their features.

2.1. The Concept of Crisis and Its Features

In economic sense, the concept of crisis that is the subject of many studies is used in quite familiar form and concept not only in economic system but also in the different scientific branches, especially in medicine. Its meaning and origin: The concept of crisis, which is based on the word "krisis" in Greek, is expressed with the meaning of selection, decision and judgement (Sakin, 2013:9). According to Turkish Language Association (TDK), crisis is defined in the form of "difficult period, depression, which is seen in the life of a society and institution in a country or between countries" (TDK, 2017).

The concept of crisis in general definition is a whole of material and spiritual losses, which is interrupted the proceeding economy in a certain time period or in an ordinary economic process actualizing suddenly in the short or long time periods (Dursunoğlu, 2009:4). In other words, crisis is an extraordinary time period requiring to make clear decisions (Darıcan, 2009:40). In the sense of social sciences, crisis is used in equivalent meaning with the concepts of crisis and depression, and it is not possible to clearly define it. According to the approach of social sciences, crisis is a specific concept, and it is necessary for it to have certain features for being able something qualify as crisis (Turgut, 2007:35). These features can be defined in the form of suddenly occurring, being in short and long time, being contagious, incorporating dangers and opportunities, forming as a result of internal and external factors.

2.2. Economic Crisis

In economic literature, crisis comes to our face in the form of negative developments, which lead economic structures to change or wear out in macro or micro scale, emerging suddenly (Güney, 2016: 11). Economic crises are named as sorts of crisis, which occur due to internal or external causes and lead to several social, economic, cultural and financial changes, instabilities and negativities in the areas they emerge (Dursunoğlu, 2009: 22). Economic crisis, in respect of structure, is a case, which is not normally met in markets, and which causes large scale cyclical fluctuations due to the fact in market mechanisms, the structure does not operate or is locked or becomes excessively sensitive (Darıcan, 2009: 40). General features of crisis phenomenon also survive in the general feature of economic crisis. Economic crises emerge in the form such as rapid constriction in production, sudden rise in interest rates, general increase in unemployment rates, net variations at price levels, bankrupts, collapses in stock markets, fluctuations in financial markets and increases in speculative attacks (Fırat, 2006: 3). For clearly conceptualizing economic crises, cyclical fluctuations must be seriously examined. Because the definition of cyclical fluctuations are referred to the various names such as periodical fluctuations, trade activities, business cycle and sequence of economic events. Definition of cyclical fluctuation, for being able to sustain trade activities, in order to express the periods of crisis and depression, was firstly begun to be used by Thomas Tooke an Jones Loyd in the literature. Clement Juglar, who is among the determiners of cyclical fluctuations at the developed level, expressed that cyclical fluctuations followed each other, and that each welfare period was followed by a depression period. In this context, crises are not events that sometimes occur, and they are handled in the form of one of cumulative construction and expansion stages. Economic fluctuations or downs and ups of economic cycle are not in a determined order and arise as disorder. Cyclical stages do not have a certain order, and these downs and ups occurring by adapting to time and space are named as long term cyclical fluctuations and short term cyclical fluctuations. Long term cyclical fluctuations are included in interest area of cyclical theories, while relatively shorter cyclical fluctuations are expressed as economic crisis or are subjected to be evaluated in crisis theories (Güney, 2016: 15). For example, the phenomenon of inflation and deflation or the phenomena such as stagflation and recession, downs and ups forming problem at the level of firm and government are not qualified as crisis. But since the phenomena such as hyperinflation and deflation suddenly and unexpectedly occur, they are named as crisis (Aktan, 2008). Economic crises can emerge, depending on many reasons. These can be put in order as supply surplus or demand shrinking occurring in real sector and financial sector, climatic changes, natural disasters, political and technological reasons, wars, economic problems at macro or micro levels (inflation, unemployment, income distribution injustice, budgetary deficits, etc.). The main principle of economic crises that occur, depending on independent reasons from each other, is to interrupt the process of development, change and growth, delaying the development of economic structure. In the structures of less developed or developing countries, that economic crises continuously occur impede the structures of these

countries to develop not only in economic sense but also cultural sense. Even if economic crises are interconnected, their impacts emerge on the different time periods and different individuals (Fırat, 2006: 4-15). The effects of economic crises are divided into two as short term crises and long term crises. The main effects of short term crises are generally seen on the stock market, exchange rates, interest rates and gold and oil prices. In the effect scope of long term crises, the main macro magnitudes such as economic growth, employment, general level of prices, income distribution, and payments balance take place (Ay, 2011: 15-21).

2.3. Economic Crisis and Its Sorts

Economic crisis is subjected to distinctions in terms of its quality and reasons. Economic crises according to their quality are divided into two as global crises and internal crises. Global crisis is qualified as a large scale crisis, which has the effects such as economic problems occurring in rest of the world, wars, global warming and sensible rises in energy prices. Internal crises are of crises, which do not form economic problem like natural disasters but lead to disruptions in financial markets, and as a result of it, which creates economic problems such as hyperinflation, budgetary deficit and corruption and which can be qualified smaller scale crisis compared to global economic crises (Dursunoğlu, 2009: 28-68). Crises are generally divided into two as real sector crises and financial sector crises. In Real sector crisis, while important developments occurs in employment or production, in financial sector crisis, destroying results emerge on all of economic activities. Briefly, they are defined as the cause of collapses in market. In this sense, these two concepts that seems to be independent from each other are in interaction with a strong tie between them.

2.3.1. Real Sector Crises

Real sector crisis, affecting the markets such as labor force markets, commodity markets and service markets, comes to our face as negativities such as unemployment, recession and inflation (Hatipoğlu, 2012: 55). These crises, with their problematic structures they generate, expose to distinctions such as inflation crisis, recession crisis and unemployment crisis. When crises, in general meaning, actualize over a certain level a together with increases in goods market and service market, they are named as inflation crisis. When they actualize under the goal of promoting investments, they are defined as recession crisis. When unemployment rates in labor force go up a certain, these crises are called as unemployment crisis (Ay, 2011: 9).

2.3.2. Financial Sector Crises

The essential aim of financial sector, whose main function in economic structuring is to supply the necessary resource for real sector markets, is to raise individual gains of economic actors to maximum level. In this meaning, there are quite high competition in financial sector. But in some cases, financial actors cannot predict the differences of the changing world and, investors, in decision making processes, cannot make sufficiently good predictions. In other words, in high risk sectors taken step by relying upon quite intensive competition and profit goal, although the factors such as manipulations, speculations and moral deviation disturb the operational order of sector, they can also lead to financial crises (Oktar and Dalyancı, 2010:3). The aim of financial sector to find the necessary financing resource for real sector reaches the conclusion that the economic and financial crises will also disturb the run of real sector. In this context, financial crises are generally defined as collapses of economic and financial markets, which disturbs the effective run of all markets and can endanger negative effects on real economic sector (IMF, 1998: 75). Financial crises not only emerge with the effect of the economic actors, organizations, institutions or instruments but also, covering negative processes in real sector, play role in the formation of financial crises (Oktar and Dalyancı, 2010: 3). Uncertain settings such as injuries of economic structures in economics structure of financial

organizations, their being in payment obligation, important collapses occurring in stock market and avoidance of national money negatively affect value level of national money, employment way and production level (Bastı, 2006: 7). 1994-1995 Latin America Crisis, 1997 Southeast Asian Crisis, 1998 Russia and Brazil Crisis, 2000-2001 Turkey Crisis 2001 Argentina Crisis and 2008 ABD Financial Crisis emerged in different settlement places of the world quite commonly and frequently. In spite of all negativities experienced in economic sense, high level reliability to the actions taken and policies applied is quite important in terms of that financial system is healthy and at the level to prevent crisis. When considered that the sensitivity of economic system against crisis, financial crises reveal themselves as a result of certain structural problems or disorders in financial or economic sectors (Ay, 2011: 10). Financial crises, depending on disturbances in organizations, findings that form the structure of system, and structuring, are handled under the different subheadings. In this context, financial crises are examined under four main groups as banking crisis, monetary crisis, foreign debt crisis and systemic financial crises (Oktar and Dalyancı, 2010: 4).

2.3.2.1. Banking Crisis
Economic individuals want to withdraw their accumulations in banks due to panic experienced in market. As a result, financial sectors becomes not to perform its duties and responsibilities and, for being able to remove this problem, provide large amount of resource transfer for banks. As a consequence, this event comes to our face as banking crisis. Banking crisis that has an important place in historical process are examined in two different ways as influx money crises and repressed banking crises. Influx money crises are based on the risk occurring upon transforming short term deposits into long term credits. Although this risk reduces the trust of economic individuals to banks, it leads deposit demands to increase. As a result, for the sake of turning of banks their assets into cash, pressure is exerted and, with pricing assets under their value, crisis phenomenon increases. In repressed banking crises, governments, forcing economic individuals, want them to keep their savings in banks (Hatipoğlu, 2012:57). In addition, government can force banks to credit to government or invest on public debts and, also both conditions, obtains income. As a consequence, banking system is damaged, and a large scale crisis emerges. In summary, while repressed crises occur in the developed countries at the different countries, influx money crises are generally in the developed countries. Banks is one of the most important elements of financial word and, for banking sector to be able to be healthy, lifelong and high welfare level, it is necessary for it to stably operate in economic activities (Ay, 2011:12).

2.3.2.2. Monetary Crisis
Monetary crisis, in respect of its definition, is a speculative attack. Because monetary crisis is named as obligation to adopt and defense monetary unit of country, ending a speculative attack, experienced through the value of national currency unit compared to foreign currency, by means of devaluation made by increasing interest rates and volume of international foreign currency reserves by authorized organs of country. National currency undergoes value loss due to technical malfunctions, international reserve losses, the fact that internal credit volume is not stable and consistent in view of exchange rate sustaining its availability in a fixed position and similar reasons (Gür and Tosuner, 2002: 12). Mostly, monetary crisis reveals in economic structures, applied fixed or semi-fixed exchange rate policies] and in case of avoidance from national money. Because while fixed exchange rate is applied to economic structures, it is necessary to be quite attentive and stable in forming exchange rate system. Fixed exchange rate system, after a short time, depending on the problems forming in current account balance, can lead speculative attacks to form on national money. In this context, while the existing situation, on the one hand, causes foreign currency reserves to get lost, on the other hand, it forces

monetary discipline to pass to a newer foreign currency system, and this new system occurs in the form of floating exchange rate (Ay, 2011: 13).

2.3.2.3. Foreign Debt Crisis

Foreign debt crisis introduces a problem, which occurs at the levels that is not possible to pay the existing debts on the name of public or private sector, to economic literature (Bastı, 2006:8). The issue that is the beginning point of crisis is based on restructuring all foreign debts due to lack of position to return or service the existing debts and difficulties experienced in finding new credits Depending on economic structure announces that it cannot pay capital and interest, which is the subject of debt, and economic event, which we call foreign debt crisis, emerges. The most vital feature of economic crisis, called foreign debt crisis, is that the crisis has a cost for the existing period and presents a temporal quality. In this context, while monetary crisis negatively affects economic and financial system around the world, the crisis we call foreign debt crisis, no matter how high the amount of debt is, leads only creditor countries to be affected (Turgut, 2007: 38). Foreign debt crisis is evaluated in crises experienced in sub sectors of finance sector through banks and are handled, setting out real sector. Uncertainty resulted from foreign debt crisis experienced in economic structure, negatively affecting employment and production levels, carry over real sector like the other sort of economic and financial crises (Bastı, 2006: 7).

2.3.2.4. Systematic Financial Crises

Systematics shocks, suddenly occurring, which cause to interrupt the main functions of system in main subjects such as credit allowance, asset assessment and payment flow, are defined as financial crises. Systemic crises, defined as largely breakdown of the value, potential and run in financial structure, arise from the main structure and factorial changes of social, political and economic life. In general sense, in the formation of systemic crises, based on the main liquidity problems, the factors such as failure of Central Bank in this case and conditions and moral danger take place. Systemic crises, with rapid development process in economic structure, can affect all country. In this context, while the trust unsettled of deposit holders causes deposit rates to decline, on the other hand, deepening systematic financial crises, it evolves a lost economic structure, from which real sector is largely affected (Hatipoğlu,2012: 57). Financial crises emerges independently from each other but, after emerging, absolutely affect each other.

3. NEUROECONOMICS
3.1. Emergence of Neuroeconomics

Economics discipline, as a result of the developments within it, is in close relationships with the different disciplines, especially sciences. In historical process, approaches actualizing away from empirical based suggestions, as a result of the factors such as changing technology and changing labor force structure, remained incapable in evaluating the existing conjuncture or initialization process and, this case was resulted in impeding economics discipline to develop as a science. As a result, it is seen that all of the predictions actualizing in the best way in time in literature review are completely made by induction method and that empirical suggestions are replaced with the theories that are more logical, tangible and observable. Thanks to this, the existence, acceptability and discipline value of economics increased, and all theories having tendency to challenge to these analyses in the past decreased. Another science, whose existence is known and acceptable, is neurology, which handles biological bases of "conscious, perception and learning", and is defined as "neural system study." The essential cause of this case is that decision makers or economic units making economic activity do not always walk on the same line and are in the situation and conditions that can be affected by many dependent and independent variables such as economic fluctuations, individual and social factors.

Neurology is a science, which evaluates cerebral functions that serve in individual decision making process and these functions operate under which conditions, and which is used in the process of explaining economic events through decision mechanisms (Soydal et al, 2010:217). Neoclassical economics that is main support of neuroeconomics survives by analyzing the thoughts and behaviors of economic individuals. In historical process, more realistic psychological theories were included in the analysis, and neuroeconomics process has begun to develop thanks to this. Because neuroeconomics applied to economics nowadays examines instincts of individuals forming society, not economic individuals, with more realistic viewpoint. In other words, realistic human behaviors such as limited rationality and limited will are explained by neuroeconomics, not full rationality assumption of economic individuals. In the scope of neuroeconomics, while our rationality perception was full of the concept uncertainty, decision making consider the subjects such as making decision with negotiated utility and interperiod selection. In this context, the organizations, behavioral styles and evolutional relationships are examined.

3.2. Development of Neuroeconomics

Utilizing neurology in generating economic events formed the concept of neoroeconomics in time. In this sense, the concept psychology was replaced with the concept neuroeconomics. Neuroeconomics has formed a large area in economics, game theory, labor economy, public finance, law and macroeconomics. With worries of economic individuals, for example, about selections under risk and uncertainty, a larger area formed. As a result of this, the other subjects of this area are put in order as expected utility hypothesis, subjective expected utility, approach of case preference and risk aversion theory. In addition, the concept neuroeconomics that develops was firstly handled by Prof. Kevin McCabe in George Mason University in 1998. In 1999, a study including neuroeconomic analyses on "Behaviors of Monkey" was published by Paul Glimcher and Michael Pratt (Soydal et al, 2010: 218). Neuroeconomics was established as a science, defined on examining the factors, which are defined as a preference theory in the literature, and which examines decisions impossible to be measured, and measuring individual preferences, determination of intangible factors, and in what way these factors affect economic behaviors. As a result, the aim of neuroeconomics is established on directly measuring the intangible concepts of the factors determined or directly introducing tangible data. Neoroeconomics is put in order as risk aversion, time preference, altruism, rationality, direct benefit of money, incentive or satisfaction, cognitive unreachability (Soydal et al, 2010:221). Neurology examines neural system including "reason, movement and internal arrangement." (Eren, 2007). The aim direction of neurology is to directly measure thoughts. The aim of neuroeconomics is intensification on the individual decisions taken. While economics is built in individual and rational choices as the main support, neuroeconomics is established on the individual, emotional and spiritual changes. While psychology, as a science, shows a development with an approach of thought structure and understanding that includes "language, cognition, memory, group psychology and abnormal psychology, " neuroeconomics shows a development on cognition and choices. Because in individual thoughts, our decisions are as important as our emotional cognition (Eren, 2007). In making decision and evaluating economic phenomena, our brain analysis our choices that are directly related to the phenomenon gain and synthesize economics and psychology. As a result, neuroeconomics brings observing neural system in economics (Soydal et al, 2010:221).

3.3. Applicability of Neuroeconomics to Economics

Economic individuals have a structure, which shapes attitudes and behaviors, expressed decision maker, as a result of economic events. These behaviors account for expectations associated with economic and social phenomena, which importantly affect neuroeconomics.

For example, gaining hope, which actualize with desire of people to avoid loss, expectation of exchange rate fall, risk worry, tangible or intangible concepts directing many thoughts in the form of increase or decrease of inflation affect economy and the existing conditions in this economy, making radical changes. In other words, if individuals have an expectation like inflation increase, the fact that individual reduce consumption, which becomes habit, or does not deposit or not bring it in economy impedes input of hot currency to economic structure and, impeding sustainability of economic stability, leads monetary inflow to interrupt. An only individual in economics does not lead to a loos to affect the existing economic structure; however, each economic individual is an out-and-out economic unit and, when considered these economic units exhibit similar behaviors altogether, loss in the existing structure becomes unavoidable. In this context, if we examine economy from micro point of view, reducing consuming behavior of an only individual, arisen from expectation of inflation increase, will cause income of another individual that individual bring in daily expenditure in the life to decrease. For example, an economic individual giving up selling bagel in daily life, with consumption budget it constraint, affect all individuals from individual selling bagel to the firm producing bagel. In this context, blockage of monetary inflow continuously going to farmer from whom firm buys raw material leads individuals and firms to less produce than market in the existing economic structure. As a result, the mechanism running in such a way is affected from the expectations of decision makers it incorporates in economy and economic behaviors that are the result of these expectations in the same rate (Soydal et al, 2010:225-226). In general framework, world economies, for sale of being to maintain continuities of the existing states of market economies prevailing in global scale and to have a voice in international area, have desired to increase the share of their own countries in a global scaled market and to be able to form a strong economic structure with a well based macroeconomic structure. This global world with technological infrastructure, in which change process continuously prevails, expresses the existing rights a country has in any international area as developedness level through its economic structure. When regarded from this point of view, neurroeconomics will have an effect such as increasing the macroeconomic effects of domestic markets, product and service demands, effective competitive market and expectations from products demanded as well as predicting supply market and proliferating consumption in the market by increasing individual benefits. As a result, neuroeconomics, in terms of cost effect on experiments and observations, application difficulties and its causing time loss, seems to have a tiring and worrying effect. However, through economic structures, ignoring the negative effects of all these factors whose judgement including a negative expression, it led all these prejudgment to be removed. Shortly, the concept neuroeconomics in the literature, due to its positive effects, has become a subject, on which it is necessary for all countries to concentrate on it especially. Neoroeconomics, since it has been considered, is an important science providing many returns for countries. If considered that its rapid development in the next period, neuroeconomics applications as well as countries using these applications will raise the upper levels compared to the other rival countries that are equal level with them, and they will have gained competitive advantage in terms of level (Soydal et al. 2010: 237).

4. THE RELATIONSHIPS BETWEEN ECONOMICS, NEUROECONOMICS AND FINANCIAL WORLD

4.1. Neoclassic Economics and Homo Economicus

Economics is a social science examining economic analyses of individuals. Economic individuals, who can exhibit dissimilar actions as a society, can develop certain policies, which can be analyzed by means of economy and can get economics approached positive sciences. Economics, which attribute its history to the works of "Wealth of Nations" by Adam Smith, until reporting the existence of neoclassic thought in 1870, attributed human psychology to

economic analyses. In this meaning, neoclassic economics, which combines economics in positive sciences and also largely maintains its dominance in new world, moved away from psychology and shifted to social sciences and natural sciences. The determinative assumptions of the thought of neoclassic economics are put in order as the factors such as individual behavior and general balance that have the methods of utility-resource distribution, marginality, rational behavior (Eren, 2011: 17). Because time forming through the data, with the assumption of resource behavior, expresses the effective use of the resources. In this sense, the full and effective use of the available resources only actualizes rationally and non-lavishly (Karakütük, 1999: 116). Economic individuals, according to pragmatism assumptions, have a structure prone to reaching pleasure and avoiding pain. In this case, the main instruments determining the principles of economic individuals are also assumptions of pragmatism theory and the elements determining happiness of economic individual also transport the utility to the top level (Özel, 2014: 50). Marginalist viewpoint utilizing the concept of utility while explaining the concept value makes a definition in the form of that the marginal unit of the amount of goods consumes decreases as the amount of goods consumed increases (Dudu, 2014: 32). According to the definition of methodic individualism, the phenomena including formation of society reduces the actions and features of economic utility in this society according to its own level (Güveloğlu, 2001: 172). Therefore, the assumption of neoclassic economics begins to economic analyses with behaviors of economic individuals (Dudu, 2014: 29). In this case, the assumption of general balance examines all goods and service supplies in economic structure, price and quantity variations, mutual relationships and balance actualizing in direction of these relationships and forming simultaneously (Dinler, 2013: 559) According to pragmatism theory, consumers individually obtain positive utility from each goods consumed. However, according to marginalism theory, consumers expose to a negative relationship between the amount of goods consumed and utility obtained from the marginal goods consumed. As known, the common point of the main assumptions of neoclassic economics is the assumption of rationality. Rational economic individual that is rational choices the sorts of variables increasing his/her utility and uses systematic that is necessary from this point of view (Dudu, 2014: 32). One of the most important economic attitudes of neoclassic school directing economic sciences to positive sciences is also the behaviors of rational individual. In the studies carried out on rational individual, sociological and psychological factors can be kept behind and even out of economic analyses. Therefore, economics has become a science intertwined with economic mathematics (Çalık and Düzü, 2009: 2-3). In short, economic individual is rational, acts according to his/her interests and experiences in the past, and consistent behaviors are observed in his/her preferences, because he/she does not have emotion-oriented thought structure (Demir, 2013: 50-51). When regarded from economic point of view, this case is called homo economicus. Because homo economicus is one of the main concepts of rational individual in the literature of economics. Social events is not primary but secondary for homoeconomicus. In this case, social events is only based on keeping personal interest (Gintis, 2000: 312). Briefly, homoeconomicus has all attributes of economic individual (Demir, 2013: 68).

4.2. The relationship between Neuroeconomics and Financial World

Since the crises occurring in financial world remain incapable in predicting a financial crisis that will actualize all over the world and accounting for the crises actualized, they led the basic economic assumption to be questioned (Bayar and Kılıç, 2010:185). Therefore, these areas remaining incapable from economic point of view were slogged on predicting behaviors of rational individuals. At this point, the concept neuroeconomics gets involved and intervenes to economics. The main principles of neuroeconomics are expressed in the form of that investors do not act rationally and, forming investment decisions, that they have a structure that is sensitive and acts with their emotions rather than profit percentage to be obtained.

For example, although a logical decision, when invested one of stocks, is to sell this stock in time, that investor does not prefer this and makes a decision in the direction that he/she can keep stock in his/her hand is an example summarizing this situation. Or although it is not again an correct behavior, being able to invest a stock drawing interest intensively in agenda defines this case in the best way. Shortly, the basic and general economic approaches remain incapable in accounting for this case (Altınırmak and Eyüboğlu, 2016:76). At this point, neuroeconomics, referring to psychology and inspiring from cerebral structure of economic individual, attracts attention to the wrong applications realized on the name of the institutional and individual investors (Szyszka, 2010: 121). Neoroeconomics emphasizes two main headings regarding the run of financial markets. The first of these headings is the heading in the direction that the psychological condition of investor is expressed with the assumptions of the basic analysis and that it can impede rational individual behavior. The second main heading is that the areas of investors to apply the concept "balance pricing" to the right priced assets are limited (Bayar and Kılıç, 2014:185). Due to the known two cases, examining financial crises from neuroeconomic point of view can be necessary. Neuroeconomics, therefore, making meaningful the relationship between cerebral functions and individual behaviors, try to reach a target. Even if a clear answer cannot be found, which does not leave in minds, it shows that neuroeconomics is proceeding on a right way. In these analyses, two functions of the brain were seriously examined. Because the functions expresses the cases of loss aversion and over confidence in limbic system (small and very important building set taking place in the brain). It is considered that the concept of over confidence leads to formation of financial balloon and the concept of risk aversion, to financial balloon to collapse. In this sense, it can be said that the concepts of over confidence and loss aversion both neuroeconomics and behavioral finance importantly emphasize have an effect in accounting for financial balloons supporting formation of global crises with the concepts of herd behaviors, especially fear sense (Altınırmak and Eyüboğlu, 2016:76-77).

4.2.1. Over Confidence

The concept of financial market extremely negative affects the structures including dense amount of confidence and performance, Lack of self-confidence and supervision whose level is high was expressed as performance decreases in the subjects participating in supply and demand tests (Peterson, 2012:160). Just as self- confidence ranging at excessive level related to securities that will be invested on them leads to be ignored the analyses on the value of those securities, also cause investment to be made in each condition (Altınırmak and Eyüboğlu, 2016:77). As a result of high degree confidence, the most important reason for investor to make investment decision is the formation of financial balloons. Because when we examine 2008 global crisis, the economic individual desiring to invest, together with sudden rise of real estate prices, decided to invest on this area and, in view of thoughts that prices will continuously rise in the future as well, never fall and that interest rates will always range at low level, had high degree confidence. In this context, that the prices are at high level did not sicken investors and buy –sell transactions in economic activities survived until the crisis balloons collapse. Optimism cause to allocate credit in continuously return search and in the form of exploitation and moral structure to collapse (Bayar and Kılıç, 2014:189). As a result of high degree confidence, people decide to invest without caring risk probability. In short, in 2008 global crisis, that the price levels of real estate rise signalized excessive risk and, as a result, high amount of dopamine hormone gaining motive of economic individual secretes in human brain led these risk and uncertainties not to be able to be predicted (Altınırmak and Eyüboğlu, 2016:77).

4.2.2. Fear and Loss Aversion

The feeling of fear and worry is a sort of feeling, which is not generally liked, and which we do not want it to include in our life. Because fear represents an emotion and thought the individuals experienced in the past time period and that became a bad experience. For example, an individual, who experienced a bad event in a dark setting and scared of it, evokes feeling of fear, every time when he/she comes in dark setting, remembering this experience due to the experience he/she acquired Thanks to this, mind will relate the concepts of dark and fear to each other. In Emerson University, a study was carried out on the subject. In the study, for staggering the fear levels of individuals, shock technique was used and, during this time, the waves of human brain, which is called rational individual by economic individual, were examined. In contrast to what is thought, it was seen that some individuals more scared of shocks and agreed to be exposed to more voltage with their own wills, because they fear and expect for process time to end right away. In this sense, it was acquired that the impression that the cerebral pain circuits of the individuals fearing much more during the time to wait for shock more worked compared to normal and that these individuals experienced the pain in their minds and that this creates perception on individuals as if it is a fact (Peterson, 2012:176). When we examine sense of fear in terms of financial markets, the words of the author called Peter Lynch that the most basic element of an investor desiring to make profit from stocks is to not scared of stocks come to our mind. Since sense of fear is an inherent sense, it leads the mind and logic of investor individual to slide into out of system and to make wrong choices. Fear forming hard leads to panic sense in individuals. For example, if an investor to invest on stocks, in case that the value of that stock declined, the panic sense of investor individual will get involved and his/her decisions will be in the direction of selling out stock immediately. One of the most important reasons for financial crisis to form and arise is the phenomena the senses of fear and panic create in the brain of individual. 2008 Crisis causing a global shake erupted, with real estate balloon, a rapid fall in prices and psychology and profit motive scaring of this fall as a result of that investors began to sell out real estates they have. These sales including feeling of panic raised prices decreases, thus, at the beginning stage of a global economic crisis, transforming into feeling of fear and panic, created a fall swirl. In this context, the case experienced took on a market structure increasing loos of value of the valuable assets. When feeling of panic is experienced one time, the process experienced after that does not repeat the same process over a certain time, and it is tired to make individuals forget. This case also became valid for financial crisis. Because after speculative balloon begin to collapse, a rapid escape occurred from derivative products and this case experienced made financial products valueless in economic market structure (Bayar and Kılıç, 2014:188-189).

5. CONCLUSION

Economics, in accordance with its definition and scope, in order to be able to maintain the existence and economic sustainability of economic individual, utilizing sociology and psychology, is expressed as a process to continue down the road. The concept of financial markets mentioned in this study and its relationship with neoroeconomics, for this purpose, has been tried to be explained, also ignoring the sciences of psychology and sociology. In the recent years, economic crises emerging in global scale and many crisis emerging economic financial world began to shake the main economic rules and led economic markets to shape their theories according to new orientations. In this sense, traditional theories assume that individuals have a rational form of behavior and that they tend to exhibit thought and behavior in economic markets like a rational individual. Although neuroeconomics, after introducing by Kahneman and Amos Tversky, has its existence accepted to economic financial world quite rapidly, it was put into minds as more different branch. In this context, the relationship between brain and financial market, which is the main assumption of neuroeconomics, has become a subject

wondered. In emergence of global scaled financial crises, financial balloons have a big share and being able to well understand the phenomenon of financial balloon and place in an experienced ground have a great importance to prevent financial crises, which have a probability to emerge in time. In this context, according to the theories of neoroeconomics, while a financial crisis acquired a place in balloon, investors present balloon as a danger and this phenomenon affect brain systematic used during deciding in terms of financial crises. As a result, investors try to predict investments of the other economic individuals and, rather reality phenomenon of prices, pursue the question that what the next price conditions of economic market will be? This case, as an effort of economic individual to predict a behavior or an act investors perform, reminds game theory that is an economic concept to individuals and, throughout our life, helps economic individuals live in harmony with each other. Because financial markets that are a very complex structure, with the effect of the forming balloons, grow every passing day and, collapsing a certain limit points, mostly leads to global crisis. Briefly, economic individuals forming markets existed much earlier than any financial crisis. Therefore, for making understandable and interpreting markets, it is necessary for us firstly to perceive and making understandable cerebral functions. Thanks to this, although contribution is made to the development and formation in the areas of neoroeconomics, economics and finance, it will be possible for us to understand the real face of humankind, hidden thorough history. Although this study attract attention the emphasis of financial crises and evaluating financial crises in the framework of neoroeconomics, it guide to understanding the crises having a highly important place in the literature of economic finance and their reasons through psychology. Just as investors, i.e. economic individuals, cam correctly make decision and interpret many variables in the same time period, consider every sort of information and document and carefully examine the past experiences and consider them while making investment decision increase the accuracy rate of investment rates, also reduce risk share. In this context, the investment decisions that are necessary to be reviewed carefully make it possible with financial education level and experienced analyzers of economic structure. In summary, it is necessary that economic individuals increase investor support and give this support without falling in any vulnerability, clearing of mindful drives. Because investments, whose risks and certainties are not considered, and which are realized without including in profit percentage, rather than making better country economy, drag it to unpreventable crisis.

LITERATURE:

1. Aktan, Coşkun C. (2008). *Yeni İktisat Okulları*. Ankara: SeçkinYayıncılık.
2. Altınırmak, S. & Eyüboğlu, A. (2016). Ekonomik Krizlerin Nöroekonomi Kavramı Çerçevesinde Değerlendirilmesi. Muhasebe ve Finansman Dergisi , (72) , 67-82. DOI: 10.25095/mufad.396720
3. Ay, Aslıhan (2011). *Dünya Ekonomisinde Yaşanan Başlıca Ekonomik Krizlerin Analizi ve Krizden Çıkış Politika -Öneri ve Görüşler-*. Yüksek Lisans Tezi, Karadeniz Teknik Üniversitesi Sosyal Bilimler Enstitüsü, Trabzon.
4. Bastı, Eyüp (2006). *Kriz Teorileri Çerçevesinde 2001 Türkiye Finansal Krizi* Ankara: SPK.
5. Bayar, Yılmaz. - Kılıç, Cüneyt. (2013), Küresel Finansal Krizin Davranışsal Finans Perspektifinden İncelenmesi, *İktisat Fakültesi Mecmuası*, 62(2), pp. 177-195.
6. Çalık, Ü.ve Düzü, G. (2009), İktisat ve Psikoloji, *Akademik Bakış*, 18, 1-13.
7. Darıcan, Mehmet F. (2013). Ekonomik Krizler ve Türkiye. *İstanbul Aydın Üniversitesi Dergisi*(17), 39-46.
8. Demir, Ö. (2013), *Akıl ve Çıkar: Davranışsal İktisat Açısından Rasyonel Olmanın Rasyonelliği*, 1. Baskı, Ankara: Sentez Yayıncılık.
9. Dinler, Z. (2013), *Mikro Ekonomi*, Bursa: Ekin Basın Yayın Dağıtım.

10. Dudu, H. (2014), Neoklasik İktisat Kuramının Genel Çerçevesi ve Eleştirisi, *Aydınlanma 1923*, 48 (48), 25-38.
11. Dursunoğlu, Abdulkadir (2009). *Teori ve İlişkileri ile Global Ekonomik Kriz*. Konya: Çizgi Kitabevi.
12. Eren, Ercan (2007). Yerleşik İktisat Ortodoks Mudur? : Denge Analizi, *İktisat Dergisi*
13. Eren, E. (2011), Yeni İktisatta Ortak Noktalar, Ercan Eren ve Metin Sarfati (Ed.), *İktisatta Yeni Yaklaşımlar,* (13-45), İstanbul: İletişim Yayınları.
14. Fırat, Emine (2006). *Ekonomik Krizler ve İstikrar Paketleri Türkiye uygulaması (1980-2002),* Doktora Tezi, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Konya.
15. Gintis, H. (2000), Beyond Homo Economicus: Evidence from Experimental Economics, *Ecological Economics*, 35 (3), 311-322.
16. Güveloğlu, N. (2001), Birey-Toplum İkiliğine Karşı Tarihsel Materyalizmin Nesnesi Olarak Toplumsal İlişkiler, *Praksis-Üç Aylık Sosyal Bilimler Dergisi*, 1, 171-182.
17. Güney, Taner (2016). *İktisat, Kriz ve Yenilik*. Konya: Çizgi Kitabevi.
18. Gür, Timur H. & Tosuner, Ayhan (2002). Para ve Finansal Krizlerin Öncü Göstergeleri. *Hacettepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 20(1), 9-36.
19. Hatipoğlu, Yıldız Z. (2012). *Davranışsal İktisat ve 2008 Küresel Finans Kriznine Getirilen Yaklaşımlar*, Yüksek Lisans Tezi, Bilecik Şeyh Edebali Üniversitesi, Bilecik.
20. IMF (1998). Financial Crises: Characteristics and Indicators of Vulnerability, World Economic Outlook.
21. Karakütük, K. (1999) İnsan Kaynakları, *Eğitim Bilimleri Fakültesi Dergisi*, 30, 115-132.
22. Oktar, Suat & Dalyancı, Levent (2010). Finansal Kriz Teorileri ve Türkiye Ekonomisinde 1990 Sonrası Finansal Krizler. *Marmara Üniversitesi İİBF Dergisi,* 19(2), 1-22.
23. Özel, H. (2014), Kapitalizm ve Mutluluk, *İktisat ve Toplum,* 40, 49-56.
24. Peterson, Richard L. (2012), *Aklın Para Üzerindeki Gücü Karar Anı*, Scala Yayıncılık, İstanbul.
25. Sakin, Hikmet (2013). *Ekonomik Krizleri Önlemede Devletin Rolü*, Yüksek Lisans Tezi, Cumhuriyet Üniversitesi Sosyal Bilimler Enstitüsü, Sivas.
26. Soydal, H. , Mızrak, Z. & Yorgancılar, F. N. (2010). Nöro Ekonomi Kavramı'nın İktisat Bilimi İçindeki Yeri, Önemi Ve Bilimselliği. *Sosyal Ekonomik Araştırmalar Dergisi,* 10 (19) , 214-240.
27. Szyszka, Adam. (2010), Behavioral Anatomy Of The Financial Crisis, *Journal Of Centrum Cathedra*, Cilt 3, Sayı 2, Ss.121-135.
28. TDK(2017),http://www.tdk.gov.tr/index.php?option=com_gts&arama=gts&guid=TDK.GTS.59942ac0f1acb5.61568446, Erişim Tarihi: 16.08.20017.
29. Turgut, Ahmet (2007). Türleri, Nedenleri ve Göstergeleriyle Finansal Krizler. *TÜHİS İş Hukuku ve İktisat Dergisi,* 20(4-5), 35-46.

E-GOVERNMENT, DIGITIZATIONAND STATE MODERNIZATION: POLICY DILEMMAS FOR ARAB COUNTRIES IN THE TWENTY-FIRST CENTURY

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ABSTRACT

This paper examines the challenges faced by Arab countries in implementing e-government initiatives and highlights how e-government can be a strategic solution to achieve the Sustainable Development Goals (SDGs) and promote effective governance. The adoption of e-government varies across the Arab countries, depending on factors such as awareness and budget allocation.While some countries, such as the United Arab Emirates Saudi Arabia, Oman, Bahrain, or Morocco have made significant progress with good quality technical implementation and clear political vision, others may face limitations due to lack of resources, political instability, or weak government vision. It is imperative to acknowledge these differences and tailor e-government initiatives to the specific contexts and needs of each country.Indeed, this success story leads us to conclude the need for robust legislation to ensure that e-government initiatives are conducted transparently, securely, and in compliance with legal principles, rights, and responsibilities.Despite the growing body of literature on this topic, there is still no universally accepted definition or conceptualization of e-government. The paper underlines the importance of comprehensive legislation in the success of e-government projects, focusing on key areas such as data protection and privacy, cybersecurity, electronic transactions, and accessibility.
Keywords: E-government, Arab countries, Digitization, Democracy, Public service, Public Law, Comparative law, Governance, Political Science, Administration policy, Reform & Modernization, Digital Gap, Data, cybersecurity, Artificial Intelligence

1. INTRODUCTION

E-government has gained significant attention as governments around the world seek to leverage information and communication technologies (ICTs) to transform their operations and interactions with citizens, businesses, and other government entities. However, despite the growing body of literature on this topic, there is still no universally accepted definition or conceptualization of e-government. This lack of consensus can be attributed to the multifaceted nature of e-government, which encompasses various aspects such as technological, organizational, social, and political dimensions, and is further complicated by the rapid advancement of technology and its evolving impact on government processes. This paper will delve into the diverse definitions and conceptualizations of e-government presented in the literature. E-government encompasses a wide range of definitions, including online government services and electronic exchanges of information and services with citizens, businesses, and other government entities. It traditionally involves the use of ICTs to improve the efficiency of government agencies and deliver services online. However, the concept of e-government has evolved to include broader interactions with citizens and businesses, open government data, and innovation in governance through the use of ICTs. The laws should also establish standards for electronic transactions, including authentication, integrity, and confidentiality, as well as mechanisms for dispute resolution and legal remedies in case of electronic transaction disputes. In fact, according to Darell West (2005) the key factors limiting the revolutionary potential of digital government includethe emergence of digital government as a controversial partisan

issue,the enduring digital divide,citizens' concerns about online privacy and security,the "two systems problem" where agencies mustdeliver services both online and offline, and the tendency for bureaucracies to emphasize efficiency ratherthan openness and accountability. Therefore, this paper will highlight the different nuances and interpretations of e-government, ranging from the use of ICTs for better service delivery to citizens, improved interactions with businesses, increased transparency, citizen empowerment, and more efficient government management. The evolving role of technology in shaping e-government will also be examined. In fact, e-government initiatives have the potential to transform government-citizen interactions and improve public service delivery. However, the success of these initiatives depends on having an appropriate legislative framework in place. This paper examines the challenges faced by Arab countries in implementing e-government initiatives and highlights how e-government can be a strategic solution to achieve the Sustainable Development Goals (SDGs) and promote effective governance. The adoption of e-government varies across countries, depending on factors such as awareness and budget allocation. The paper concludes by emphasizing the need for robust legislation to ensure that e-government initiatives are conducted transparently, securely, and in compliance with legal principles, rights, and responsibilities. Indeed, despite the potential benefits of e-government initiatives in Arab countries, including improved governance, enhanced public services, and progress towards achieving the Sustainable Development Goals (SDGs), there are significant challenges that hinder their successful implementation. These challenges include varying levels of internet access and adoption, concerns about state control and surveillance, filtering of internet content, cultural transformation of public services, promoting citizen participation, and improving the quality and quantity of public data. E-government for sustainable development, according to Estev and Janowski, is the use of ICT to support publicservice, public administration and the interaction between government and the public whileenabling public participation in government decision-making, promoting social equity andsocio-economic development and protecting natural resources for future generations (Estevez & Janowski, 2013). In other words, addressing these challenges and developing appropriate legislative frameworks are crucial for unlocking the full potential of e-government in Arab countries and realizing the promised benefits of transparent, accountable, and inclusive governance through digital technologies. We use in our comparison between Arab countries, in this paper; the EGDI is a comprehensive survey that provides an assessment of e-government development worldwide. It takes into account the online presence and e-government policies of all United Nations Member States, evaluating how e-government strategies are applied in different sectors for delivering essential services. The relative performance rating used in the assessment allows for a comparison among countries, providing a benchmark for measuring progress.

2. LITERATURE REVIEW

The term "e-government" emerged in the late 1990s in the state of Florida, USA, and was officially introduced at a conference in Italy in 2001. The British government defines e-government as the utilization of electronic tools and methods, such as telephone lines, fax, and the internet, to deliver services by local government institutions. The evolution of the conception of e-government has evolved according to different scholars. Allen et al. (2001) explore the emergence of e-government and its potential impact on decision-making, power-sharing, and coordination. Means and Schneider (2000) define e-government as the electronic relationship between governments and their customers and suppliers. Hernon (1998) views e-government as the use of IT to deliver public services to customers. Jaeger (2003) emphasizes the use of information and communication technologies (ICTs) alongside the Internet and the Web in e-government initiatives, such as databases, networking, analytics support, multimedia, automation, tracking and tracing, and personal identification technologies.

The paper by Hu, Guangwei, Wenwen Pan, and Jie Wang (2010) discusses the existing studies that have examined various aspects of e-government, including theoretical foundations, research trends, perspectives, philosophies, theories, methods, and practices.Despite the numerous definitions and conceptualizations of e-government, there is no universally accepted conception of the term (Halchin, 2004). Wimmer (2002) argues that interpretations of e-government vary widely, indicating a lack of consensus. This lack of consensus stems from the multifaceted nature of e-government, which encompasses technological, organizational, social, and political dimensions. Moreover, the rapid advancement of technology and its evolving impact on government processes further complicates the understanding of the concept (Prins, 2001). There are two distinct definitions of e-government, with one emphasizing the intensive use of information technologies across government functions and the broader goals of public service delivery, managerial efficiency, and democratic values. The other definition focuses on the transmission of government information via the internet to citizens and businesses, as well as between government agencies(Gil-Garcia and Pardo 2005).The use of technology in government has two distinct functions, e-government and e-governance, with the former focusing on electronically provided government services to citizens and the latter involving an interactive dynamic between government elites and citizens(M. J. D'Agostino, R. Schwester, T. Carrizales and J. Melitski, 2011). One criticism of the first definition of e-government is that it lacks specificity in mentioning specific technologies such as the Internet, databases, or other information and communication technologies (ICTs) commonly associated with e-government. This lack of specificity may result in varying interpretations of what constitutes e-government. On the other hand, the second definition places emphasis on the transmission of government information via the Internet, which is a key aspect of many e-government initiatives. This limited focus may not capture the full scope of e-government initiatives and may exclude other important aspects of e-government beyond Internet-based transmission of information. David Brown (2005) argued that electronic government "encompasses all government roles and activities, shaped by information and communications technologies (ICTs). Going well beyond analogies to e-commerce, it encompasses the four domains of governance and public administration: the state's economic and social programs; its relationships with the citizen and the rule of law (e-democracy), its internal operations and its relationship with the international environment. E-government builds on three evolving forces: technology, management concepts and government itself". This definition of e-government goes beyond applying e-commerce concepts to government operations, and involves multiple domains of governance and public administration. It acknowledges the multifaceted nature of e-government and its potential impact on various aspects of government functions. It also recognizes that e-government builds on technology, management concepts, and government processes. However, a criticism is that it may be overly broad and lack specificity, making it difficult to clearly delineate what falls under e-government and what does not. Additionally, it does not explicitly highlight the importance of citizen-centricity, which is a key principle of many e-government initiatives. Further emphasis on citizen-centricity and considering a wide range of definitions and perspectives may be beneficial to capture the multidimensional nature of e-government. Furthermore, David Brown categorizes e-government into four domains based on the different areas of governance and public administration:

1) Economic Domain: This domain focuses on the jurisdiction of the state and its roles and relationships within the economy and society.
2) Legitimacy Domain: This domain pertains to the legitimacy of the state and its relationship with its citizens and the rule of law. E-government initiatives in this domain encompass e-democracy and e-governance.

3) Administrative Domain: The operations of state institutions form the basis of this domain. E-government initiatives in this domain involve electronic public administrations, where ICTs are utilized to transform government operationsand administrative processes.
4) International Domain: This domain focuses on the state's relationship with other state actors, international institutions, and international private and non-governmental actors.

In the relation with the international domain, international institutions tried to give a clarified definition to the conception of e-government. Indeed, according to the OECD e-government "refers to the use by the governments of information and communication technologies (ICTs), and particularly the Internet, as a tool to achieve better government", while Digital Government (DG) "refers to the use of digital technologies, as an integrated part of governments' modernization strategies, to create public value. It relies on a digital government ecosystem comprised of government actors, non-governmental organizations, businesses, citizens' associations and individuals, which supports the production of and access to data, services and content through interactions with the government" (OECD 2014, p. 6). Thus, the Organization for Economic Cooperation and Development understand e-government as a high-quality administration that relies on information and communication technologies, especially the Internet, as a tool aimed at establishing a "global quality" administration. For the World Bank, "E-Government" refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions. Indeed, is a concept that involves the use of information and communication technology to change the way citizens interact in the decision-making process, linking better ways of accessing information, increasing transparency, and strengthening civil society. E-government, for the UN is defined as the use of ICTs to effectively and efficiently deliver government services to citizens and businesses, aiming for public ends through digital means. It involves the application of ICTs in government operations, with the goal of reducing financial costs, transaction times, and improving work flows and processes across different government agencies. An effective e-governance institutional framework supports the underlying principle of e-government, with the aim of achieving sustainable solutions. In fact, through innovation and e-government, governments worldwide can become more efficient, provide better services, respond to citizen demands for transparency and accountability, promote inclusivity, and restore trust in their governance. The use of ICTs in e-government can enable positive transformations in government operations and service delivery, leading to improved governance and citizen satisfaction. In fact, all these definitions involve the use of the Internet and information and communication technologies to send government information and services to citizens, reorganize government departments for improved efficiency, and enable access to government services through electronic means. These definitions also emphasize the convenience, speed, and accessibility of electronic transactions, as well as the potential for non-traditional means of providing and obtaining government services and align with the broader understanding of e-government as a means to leverage technology for more efficient and effective government operations, enhanced citizen engagement, and improved service delivery.

3. PROBLEMATIC AND METHODOLOGY
The field of public law has shifted from a focus on the State to the individual and their rights and freedoms. Comparative public law has become more accessible and less abstract due to the

use of comparative law by institutional and jurisdictional organizations. In fact, comparative law has become an essential decision-making tool in public law courts. Comparative law is a method of comparing and contrasting legal systems across different countries and cultures. Legal professionals use this method to understand the differences and similarities between legal systems, which can be useful in a variety of legal settings. However, there is a paradox created by the meeting of comparative law and legal theory. While a true theory aims to impose itself on any system of law, comparative law is only interested in the differences between systems. The relationship between comparative law and legal theory is therefore a difficult one. Indeed, we should appreciate the context in which comparative law and legal theory operate. The context is not limited to social or cultural facts but extends to methodological and epistemological networks, such as schemas of intelligibility, paradigms, and epistemological approaches. Furthermore, the importance of comparative law in administrative law, allow us to understand how the differences between legal orders should be considered as well as analogies. Understanding the differences between legal orders is crucial for a fruitful work of approximation of rights, especially administrative rights. In this paper we suggest that there are significant differences between Arab countries regarding state theory and administrative law, and these differences should be studied to determine the framework in which administrative law evolves. According to Weber, genuinely critical comparison can be both praiseworthy and fruitful so long as it does not set itself the goal of chasing after 'analogies' and 'parallels' like constructions of general schemes of development which are fashionable today.Nevertheless, in order to analyze the Arab countries policies to enhance digitization and to modernize the public service we have made the choice to use international index using by international organization in order to compare the evolution of these countries in the 21st century.E-government projects hold the promise of transforming the way governments interact with citizens, businesses, and other stakeholders, and improving the delivery of public services. These laws provide the legal basis for the implementation and operation of e-government initiatives, ensuring that they are aligned with legal principles, rights,and responsibilities and in general with the Constitution of the country. Our methodology has tried to conduct a comparative analysis between Arab countries by excluding two countries that are part of the Arab League, namely Djibouti and the Comoros. Our analysis retained the EGDI index. Indeed, it allows us to have a dynamic overview in order to analyze the situation and legal framework of Arab countries. Overall, the EGDI serves as a valuable tool for measuring and comparing the progress of e-government development among countries. It emphasizes the importance of not only technological aspects, but also the capacity of countries to participate in the information society, in order to achieve effective e-government outcomes.While the basic model of the EGDI remains consistent, the meaning of the values may change in different editions of the survey as understanding of e-government potential and technology evolves. This distinguishes it as a comparative framework that encompasses different approaches over time, rather than advocating a linear path with an absolute goal. The inclusion of indicators of a country's capacity to participate in the information society is significant, as it recognizes that e-government efforts are not only about technology, but also about the broader socio-economic context. Without the necessary capacity to participate in the information society, e-government initiatives may face limitations in achieving their intended impact.

4. ANALYZE AND DISCUSSION OF RESULTS: THE CHALLENGES OF E-GOVERNMENT IN ARAB COUNTRIES

The Arab states faced many challenges in recent decades. They have jeopardized political and socio-economic stability. Therefore the dynamic of Arab countries experience with the internet varies across the region. Some countries, like Tunisia, Kuwait, Egypt, and the UAE, were early adopters of the internet in the 1990s, while others, like Syria and Saudi Arabia, had delayed

access. The political effects of the internet in the Arab World include e-governance projects for political reform, increased civic engagement through online forums, and enhanced state surveillance. However, there are concerns about state control, filtering of the internet, indicating that the internet can both empower state power and individual freedoms. Some countries, like Jordan, Egypt, and Dubai, have developed e-governance capabilities for basic services and online access to government resources (Deborah Wheeler 2006). E-government and Open government can be a strategic solution to help Arab countries to implement all 17 Sustainable Development Goals (SDGs) and reduce risks of socio-political instability, civil strife, and conflicts. Transparent government activities, procedures, and data, along with public participation and meeting citizens' demands, can lead to better government performance. Indeed, the principle of accountability for successes and failures is crucial for effective governance within the e-government approach. In fact, innovations that give citizens a greater say in governance, such as in public services (water, health, and education), infrastructure projects, and budget allocation, can facilitate progress towards sustainable development. According to "In Arab countries, e-government services are at different stages of development and sophistication, as reflected in the United Nations E-Government Survey. Countries share many common challenges, including the cultural transformation of their public services, promoting citizen participation and e-government services, and improving the quality and quantity of public data"(Economic and Social Commission for Western Asia 2019). Nevertheless, e-government presents potential solutions to improve governance and unleash the developmental potential of Arab countries. E-government has gained a special status within societies, due to the role that modern technologies play in facilitating public services for beneficiaries. However, the adoption of e-government varies from one country to another, depending on the awareness of individuals in the society about these technologies and the budget allocated for the infrastructure to embrace digitization in public facilities. Indeed, according to OECD "the envisaged goals of open government differ greatly from those of e-government; however, connections exist between the methods employed in each and their outcomes. E-government strengthens interaction between Government and its institutions, on the one hand, and stakeholders (individuals and groups), on the other, thus enabling stakeholders to better access desired services".[1] (UNESCWA, 2018). The Arab world has not been far from this development achieved by humanity through technological advancement. In fact, it has been proactive in developing strategies and plans to implement e-government effectively, as seen in the United Arab Emirates (UAE), which is considered a model to be emulated in both Arab and Western countries. However, some Arab countries still lag behind in implementing e-government in vital sectors such as Morocco, Algeria, Egypt, and Tunisia. Meanwhile, Western countries have surpassed digitization in traditional sectors such as healthcare, security, and education, and have adopted smart government practices in their internal and external relations, driven by the increasing societal awareness of the importance of these services in public facilities. The key milestones of e-government implementation in the United Arab Emirates include the establishment of the General Information Authority in 1982, the launch of fiber-optic supported services in 1985, and the establishment of Dubai Internet City in 1995. We can add other best practice in the UAE launched in 2017 the UAE Pass, a digital identity platform that allows users to access various government services using a single digital ID and on 2020 UAE has established the Digital Government Corporation, responsible for developing digital government services and promoting digital transformation in the UAE. The experience of e-government in the United Arab Emirates did not stop at these stages, but continued to evolve and develop until Dubai became a free zone in terms of infrastructure and electronic applications.

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[1] https://www.unescwa.org/sites/default/files/pubs/pdf/fostering-open-government-arab-region-2018-english.pdf

This development included various services, especially in light of the spread of the "COVID-19" pandemic, which pushed countries to the necessity of digitizing their services. The United Arab Emirates has shown a positive step in the global rankings of e-governments, moving from 29th place in 2016 to 21st place in 2020 and to 13th place in 2022. Indeed, the country is ranked fourth worldwide in investment in telecommunications services and in the digital adaptation of its legal framework. The Government defines itself as the world's first 100 per cent paperless Government—a feat achieved through the full digitalization of the education, health, and community development, economy and security sectors. Among other initiatives, 525 of the country's 589 schools have participated in a self-evaluation process that will lead to their eventual conversion to smart schools. Furthermore, public administration has also undergone digitalization and simplification processes. At present, the Government provides 500 online services, many of which have been streamlined and made faster and easier for public institutions and users.[2] Four of the six Gulf Cooperation Council (GCC) countries are in the very high EGDI group; the United Arab Emirates is ranked highest and is part of the VH rating class, followed by Saudi Arabia (V2) and Bahrain and Oman (both V1). Kuwait and Qatar are in the highest (HV) rating class of the high EGDI group. All of these countries have highly developed telecommunications infrastructure (the average TII for this group is 0.8246). Most also have relatively high OSI and HCI values, though strengthening investment in online services provision could help propel Qatar and Kuwait into the very high EGDI group. Qatar should also consider investing more in human capital development, and Bahrain would likely benefit from further investment in infrastructure. The United Arab Emirates 13th on 2022, Saudi Arabia Ranks 31st in EGDI values, flowed by Oman ranks 50th flowed and Bahrain ranks 54th. Kuwait is ranked on the 61st position globally and Qatar 78th. In Fact, all countries in the GCC countries had conducted reforms and modernization of the administration of state. Otherwise, Bahrain, for example, since 2013 Bahrain has set-up a Supreme Committee for Information and Communication Technology (SCICT) and the e-Government Authority was established to provide direction in developing and implementing a comprehensive e-Government strategy. The country also held the Bahrain International e-Government Forum in Manama in April 2013, dealing with innovation and open data, mobile trends, cloud computing and shared services, social networks and e-Government. We can observe that all six GCC countries rank within the top 10 in Western Asia in e-Government. The factors contributing to their high e-Government rankings include high GDP, high literacy rates, small populations, and government investment in online national portals. Indeed, the GCC countries have their online portals linked to one another, allowing for easier navigation and access for their citizens.The GCC countries organize the GCC e-Government Conference and have established a GCC e-Government committee to discuss and share experiences on e-Government programs, enhancing their e-Transformation processes. The cooperation and initiatives in e-Government in GCC countries aim to deliver transparent, efficient, and citizen-centric services, prioritizing the needs of the citizens as clients.The GCC countries are making significant efforts to develop and implement e-Government strategies, with Bahrain leading the rankings.These initiatives have the potential to improve government services, enhance transparency, and benefit the citizens in the GCC countries. The evolution of E-Government Development Index values of Arab countries since 2003 and their ratings in the 2022 edition indicates steady progress. Of the 193 countries surveyed, the United Arab Emirates Saudi Arabia Oman and Bahrain were among the leading group. Following the GCC countries, Lebanon, Jordan, Morocco and Tunisia are among the second group of countries with a high value. This indicates that many Arab countries have successfully implemented e-government services.

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[2] https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf

	EGDI			OSI 2022	HCI 2022	TII 2022	EGDI RANK 2022
	2016	2020	2022				
United Arab Emirates	0.7515	0.855	0.9010	0.9014	0.8711	0.9306	13
Saudi Arabia	0.6822	0.7991	0.8539	0.8220	0.8662	0.8735	31
Oman	0.5962	0.7749	0.7834	0.8600	0.8722	0.6626	50
Bahrain	0.7734	0.8213	0.7707	0.7523	0.8154	0.7444	54
Kuwait	0.7080	0.7913	0.7774	0.6973	0.7706	0.7774	61
Qatar	0.6699	0.7173	0.7149	0.6094	0.7150	0.8203	78
Tunisia	0.5682	0.6526	0.6530	0.6031	0.6911	0.6646	88
Jordan	0.5123	0.5309	0.6081	0.6594	0.6967	0.4681	100
Morocco	0.5186	0.5729	0.5915	0.4721	0.6350	0.6676	101
Egypt	0.4594	0.5527	0.5895	0.5730	0.6375	0.5579	103
Algeria	0.2999	0.5173	0.5611	0.3743	0.6956	0.6133	112
Lebanon	0.5646	0.4955	0.5273	0.4257	0.6656	0.4907	122
Iraq	0.3334	0.4360	0.4383	0.206	0.5888	0.5201	146
Syrian Arab Republic	0.3404	0.4763	0.3872	0.3053	0.4983	0.3581	156
Libya	0.4322	0.3743	0.3375	0.099	0.7534	0.1601	169
Mauritania	0.1734	0.2820	0.3157	0.0952	0.3873	0.4648	172
Sudan	0.2539	0.3154	0.2972	0.2118	0.3599	0.3199	176
Yemen	0.2248	0.3045	0.2899	0.3393	0.3633	0.1671	178

Figure 1: The evolution of EGDI in Arab countries
(Source: United Nations 2016,2020 and 2022, E-government survey.)

The e-government report highlights the significant impact of e-government information services on development, but also notes that their impact on streamlining government processes, citizen feedback, and government workers' efficiency has been limited. This observation is not only applicable globally, but also resonates with many Arab countries. While e-government initiatives have enabled governments that are willing and capable to better serve their citizens, they have not yet empowered citizens to hold unwilling governments more accountable. This underscores the importance of having a robust legislative framework in place to ensure the success of e-government projects.One of the challenges faced by many Arab countries is the lack of comprehensive legislation that governs e-government initiatives. This gap in the legislative framework can hinder the full realization of the potential benefits of e-government, such as improved service delivery, increased transparency, and enhanced citizen engagement. Without appropriate laws and regulations, e-government projects may face legal uncertainties, lack of accountability mechanisms, and potential risks to data security and privacy.For instance, data protection and privacy are critical concerns in e-government projects, as they involve the collection, storage, and processing of vast amounts of data, including personal information of citizens. Without robust data protection laws, citizens may be hesitant to share their personal information online, leading to a lack of trust and confidence in e-government services. Similarly, without clear regulations on cybersecurity, e-government initiatives may be vulnerable to cyber threats, which can compromise the confidentiality, integrity, and availability of government data and services. Another report of OCDE (2017), assesses the digital government strategies of Egypt, Jordan, Lebanon, Morocco, Tunisia. This group of Arab countries has recognized the strategic importance of digital technologies for public sector modernization, and is developing digital government strategies. The rapid and enthusiastic uptake of information and communications technologies (ICTs) in the region and the rise of the first generation of "digital natives", individuals born and raised in the digital era, are putting pressure on governments to adapt their communication and interaction channels to

a 21st century constituency. Furthermore, according to the same report "Certain countries often aim to foster the adoption of digital government services through the establishment of mandatory online services. These often concern university applications and enrolment (as in Egypt) or tax declarations (as in Tunisia1) or the declaration of import and export goods in Morocco. While potentially powerful, this approach should be used with caution, especially regarding persistent digital divides, to avoid the creation of new forms of exclusion" In Egypt, the Ministry of Communications and Information Technology is the main agency responsible for driving digital transformation in Egypt, with the current strategy being the ICT 2030 strategy. The focus of Egypt's GovTech efforts is primarily on GovTech enablers, public service delivery, and core government systems, rather than citizen engagement. The Digital Egypt program has launched several initiatives aimed at providing training opportunities for young people to prepare them for both the national and international labor markets. One such initiative is the Introduction to Innovation and Technology training program, which offers resources to promote innovative thinking, build nationwide entrepreneurship, and strengthen the innovation ecosystem in Egypt. These efforts aim to foster a culture of innovation and entrepreneurship among the youth, and enhance the overall innovation ecosystem in the country(World Bank, 2022).When we compare Egypt and Morocco in terms of their E-government strategies and initiatives we observe that Egypt has focused on social inclusion and has sought international support and private partnerships in implementing its E-government strategy. Although enrollment rates have improved, the quality of education is still unsatisfactory in Egypt, and the government has continued to invest in building and expanding its training infrastructure.On the other hand, Morocco has primarily focused on developing ICT infrastructure and improving government-to-business interactions. However, Morocco has recently recognized the importance of social transformation in its E-government strategy, with the goal of replicating the success of mobile telephony in internet access and availability of services via the web. Morocco has underperformed in terms of the availability of transactional services and promotion of a connected approach compared to other countries in the Arab region. Like Egypt, Oman has made significant progress in the field of GovTech (Government Technology) with the establishment of an online public service portal that provides information and transactional level services. Citizens can use this portal to start a business or establish e-residency. Additionally, Oman has launched an online job portal that serves as the primary platform for both public and private sector employment. Candidates can register, search for available jobs, and submit applications through this portal. The Ministry of Transport, Communication and Information Technology is the government entity responsible for GovTech issues in Oman, overseeing matters related to strategy, policy, and e-government. While Oman has room for growth in terms of citizen engagement, it has promising beginnings with an open data portal that contains basic data and is regularly updated. Oman also offers a portal where citizens can participate in policymaking and provide anonymous feedback to the government. These efforts demonstrate Oman's commitment to leveraging technology to enhance public service delivery and engage citizens in decision-making processes (World Bank, 2022).This is a great example of how data interoperability and supportive institutional arrangements can enable efficient and effective public service delivery. By connecting multiple government agencies and databases, Jordan was able to create a unified database for targeting cash transfers to poor households. This proved to be crucial during the COVID-19 pandemic, as the government could quickly identify eligible households and disburse cash payments through the National Aid Fund. The significant increase in the use of mobile wallets for aid distribution, from 6% to 69%, highlights the potential of technology in improving service delivery and reaching beneficiaries in need. It's a positive example of how GovTech initiatives can make a meaningful impact on people's lives, particularly during times of crisis. Indeed, the creation of the database involved connecting the management information systems of six government agencies and more than

two dozen different databases. Creating the unified database required developing a data interoperability framework and setting up supportive institutional arrangements. Another group can be distinguished from Arab countries that have experienced socio-political difficulties and are facing political conflict, economic challenges that have impacted its overall progress in e-government. This group can be composed by Mauritania, Iraq, Sudan, Syria, Libya, Yemen and Lebanon.This group in order to improve its e-government capabilities could focus on enhancing its digital infrastructure, expanding digital literacy programs, and strengthening institutional frameworks to support digital governance. The value of 0.52730 in 2022 indicates that Lebanon needs to further invest in digital infrastructure and services to improve its e-government capabilities. Libya's e-government development has faced significant challenges due to political instability and conflict in recent years, as evident from its low rankings and values. With a rank of 169 in 2022 and a value of 0.3375, Libya has a long way to go in developing its e-government capabilities and leveraging technology for effective governance. In the same framework, Syria and Iraq had faced significant challenges in e-government development due to ongoing conflicts and political instability. With a rank of 156 in 2022 and a value of 0.3872, Syria lags behind in leveraging digital technologies for governance and public service delivery. The Yemen is also another Arab country suffering from political instability that impact the development of e-government due to political conflict. With a rank of 178 and a value of 0.2899 Yemen is the last Arab county in terms of EGDI. Overall, Lebanon has remained relatively stable but needs improvement, while Libya Iraq, Yemen, Mauritania and Syria face significant challenges in their e-government development due to ICT infrastructures or political instability and conflict. All these countries need to invest in digital infrastructure, capacity building, and institutional reforms to enhance their e-government capabilities and improve governance and public service delivery through digital channels.However, there are still challenges to overcome, such as limited internet penetration, lack of digital literacy, and inadequate infrastructure in some parts of these countries.

5. CONCLUSION
The lack of a universally accepted conception of e-government has implications for research, policy, and practice. Adoption e-government can have many advantages we can name three:
1) E-government enables government departments to know the needs and desires of beneficiaries through high and renewable informatics, which can increase sales by catering to those needs and desires.
2) E-government allows government departments to better understand complaints and problems of auditors, enabling them to address them and overcome their causes, thus improving customer satisfaction.
3) E-government provides information and ease of summoning, allowing administrative authorities, auditors, or target parties to access information quickly and easily, eliminating the need to wait for hours or days as in traditional administrations.

The study of the dynamic of e-government in the Arab region shows that several Arab countries have made steady progress in their e-government development since 2003. The United Arab Emirates, Saudi Arabia, Oman, and Bahrain were among the leading group of countries according to the E-Government Development Index values in the 2022 edition. Other countries like Jordan, Morocco, and Tunisia were also part of the second group with high values, indicating successful implementation of e-government services.However, there are challenges that many Arab countries face in their e-government initiatives. One major challenge is the lack of comprehensive legislation that governs e-government projects. Without appropriate laws and regulations, e-government projects may face legal uncertainties, lack of accountability mechanisms, and potential risks to data security and privacy.

Data protection and privacy, as well as cybersecurity, are critical concerns in e-government projects, and without robust laws and regulations in place, citizens may be hesitant to share their personal information online, leading to a lack of trust and confidence in e-government services.In terms of specific countries, Egypt is considered one of the leading GovTech economies in Africa, with a focus on public service delivery and core government systems. Morocco has primarily focused on developing ICT infrastructure and improving government-to-business interactions, but has recently recognized the importance of social transformation in its e-government strategy. Oman has made significant progress in GovTech with an online public service portal and an online job portal, but has room for growth in citizen engagement. On the other hand, Mauritania, Iraq, Sudan, Syria, Libya, Yemen and Lebanonhave experienced socio-political difficulties and are facing political conflict, economic challenges that have impacted its overall progress in e-government. According to Mourtada R., Felden F., Bruehwiler R., Joykutty T. (2022) there has been clear emphasis on accelerating digital transformation to meet national priorities and rising citizen expectations. In other words three trends are observed in Arab countries:

1) Re-structuring ofkey public sector authorities to account for digital focus and ensure the prioritization of government digital transformation efforts.
2) Centralized regulation of digital transformation efforts on a national level
3) Harmonized digital government services targeting enhanced government to citizen experience.

The challenges faced by Arab countries in implementing e-government initiatives can be categorized into four main areas: management and administrative, demographic and social, economic, and infrastructure/connectivity issues. These challenges need to be addressed to ensure the successful implementation of e-government projects and achieve meaningful progress in digital transformation. The need for management and administrative reforms within Arab administrations is one of the big challenges that should Arab policymakers answer. In many Arab countries, there may be gaps in infrastructure, especially in rural and remote areas. Addressing these infrastructure challenges and ensuring widespread internet access are crucial to enable the effective delivery of e-government services. It is important to note that there are variations in the level of e-government implementation among Arab countries. While some countries, such as the United Arab Emirates Saudi Arabia, Oman, Bahrain, or Morocco have made significant progress with good quality technical implementation and clear political vision, others may face limitations due to lack of resources, political instability, or weak government vision. It is imperative to acknowledge these differences and tailor e-government initiatives to the specific contexts and needs of each country.

LITERATURE:

1. Allen, B. A., Juillet, L., Paquet, G., et Roy, J. (2001). "E-Governance & government on-line in Canada. Partnerships, people, & prospects". Government Information Quarterly, 18 (2), 93–104.
2. American Society for Public Administration (ASPA) and the United Nations Division for Public Economics and Public Administration (UNDPEPA), 2002. Benchmarking e-government: A Global Perspective. (online) Available at: Http://unpan1.un.org/intradoc/ groups/public/documents/un/ unpan021547.pdf
3. Anthopoulos, L. G., Siozos, P., et Tsoukalas, I. A. (2007). "Applying participatory design and collaboration in digital public services for discovering and re-designing e-Government services". Government Information Quarterly, 24(2), 353–376.
4. Astley, W. G. (1985). "Administrative science as socially constructed truth". Administrative Science Quarterly, 30(4), 497–513.

5. Brown, D. (2005). Electronic government and public administration. International Review of Administrative Sciences, 71(2), 241–254.

6. Brown, M. M., et Brudney, J. L. (2001). "Achieving advanced electronic government services: An examination of obstacles and implications from an international perspective". Paper presented at the National Public Management Research Conference, Bloomington, IN.

7. Ciborra, C and Navarra, D., (2005). Good Governance, Development Theory, and Aid Policy: Risks and Challenges of E-government in Jordan, Information Technology for Development. 11 (2): 141-159.

8. D'Agostino M.J., Schwester R., Carrizales T., MelitskiJ., (2011). "A Study of e-government ande-governance: an empirical examination of municipal websites',Public Administration Quarterly , SPRING 2011, Vol. 35, No. 1 (SPRING 2011), pp. 3-25.

9. Darwish, A., (2008). Egypt: From E-government to E-governance: The Road to Fast Pace Development, ICEGOV, Cairo, Egypt, December 1-4.

10. El Beblawi, H., 2008. Economic Growth in Egypt: Impediments and Constraints (1974-2004). Commission on Growth and Development. Working Paper No. 14.

11. Estevez E. &Janowski T. (2013). Electronic Governance for Sustainable Development : Conceptual framework and state of research. Government Information Quarterly. 30, S94–S109.

12. Estevez E., Janowski T., Dzhusupova Z. (2013). Electronic Governance for Sustainable Development – How EGOV Solutions Contribute to SD Goals? The Proceedings of the 14th Annual International Conference on Digital Government Research.

13. Gartner Group. (2002). GartnerEXP Says a Majority of E-Government Initiatives Fail or Fall Short of Expectations. GartnerEXP, Stamford, CN.

14. Gelvanovska, N.; Rogy M.; Rossotto C. M. (2014). Broadband Networks in the Middle East and North Africa : Accelerating High-Speed Internet Access. Directions in Development--Communication and Information Technologies;. Washington, DC: World Bank.

15. Glass L.-M. and Newig, J. (2019). Governance for achieving the sustainable development goals: How important are participation, policy coherence, reflexivity, adaptation and democratic institutions? Earth Syst. Governance, vol. 2, Apr. 2019, Art. no. 100031.

16. Göll E. & Zwiers J. (2018). Technological trends in the MENA region: the cases of digitalization and Information and Communications Technology (ICT). MENARA Working Papers No. 23, November 2018.

17. Halchin, L. E. (2004). "Electronic government: Government capability and terrorist resource". Government Information Quarterly, 21(4), 406?419.

18. Hargadon, A., et Sutton, R. I. (1997). "Technology brokering and innovation in a product development firm". Administrative Science Quarterly, 42(4), 716–749.

19. Heeks, R., et Bailur, S. (2007). "Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice". Government Information Quarterly, 24(2), 243-265.

20. Heeks, R., et Bailur, S. (2007). "Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice". Government Information Quarterly, 24(2), 243-265.

21. Hernon, P. (1998). "Government on the Web: A comparison between the United States and New Zealand". Government Information Quarterly, 15(4), 419?443.

22. Hu, G., Pan, W. & Wang, J. (2010). Le lexique particulier et la conception consensuelle du gouvernement électronique : une perspective exploratoire. Revue Internationale des Sciences Administratives, 76, 605-625.

23. Means, G., et Schneider, D. (2000). Meta-capitalism: The e-business revolution and the design of 21st century companies and markets. New York: John Wiley & Sons Inc.

24. Mourtada R., Felden F., Bruehwiler R., Joykutty T. (2022).Digital Government: Transformation in the Middle East, Sharpening execution and sustaining delivery impact, Boston Consulting Group, https://web-assets.bcg.com/4e/80/ee46ed7849088fb6b99 4fb311727/digital-government-transformation-in-the-middle-east.pdf

25. Organization of Economic Cooperation and Development (2014). Recommendation of the Council on Digital Government Strategies, OECD, Paris, http://www.oecd.org/gov/digital-government/Recommendation-digital-government-strategies.pdf.

26. Organization of Economic Cooperation and Development (2017). Benchmarking Digital Government Strategies in MENA Countries, Government Studies, OECD Publishing, Paris.http://dx.doi.org/10.1787/9789264268012-en

27. Prins, C. (2001). Electronic government: Variations of a concept. In J. E. J. Prins (Ed.), Designing egovernment: On the crossroads of technological innovation and institutional change (pp. 1?5). The Hague: Kluwer Law International.

28. Rarhoui K. (2023), E-government as a tool for the modernization of the public administration, PhD Thesis in Public Law, Mohammed V University in Rabat.

29. UNESCWA, United Nations Economic and Social Commission for Western Asia (2019). Arab Horizon 2030, Digital Technologies for Developmenthttps://www.unescwa.org/sites/ default/files/pubs/pdf/fostering-open-government-arab-region-2018-english.pdf

30. Van Hoecke M. & M. Warrington (1998), 'Legal Cultures, Legal Paradigms and Legal Doctrine: Towards a New Model for Comparative Law', The International and ComparativeLaw Quarterly, p. 495-536.

31. Van Hoecke, M. (2004), 'Deep Level Comparative Law', in: M. Van Hoecke (ed.), Epistemology and Methodology of Comparative Law, Oxford: Hart Publishing, p.165-195.

32. Van Hoecke, M. (2012), 'Family Law Transfers from Europe to Africa: Lessons for the Methodology of Comparative Legal Research', in: J. Gillespie & P. Nicholson, Law and Development and the Global Discourses of Legal Transfers, Cambridge: Cambridge University Press, ch. 10, p. 273-295.

33. Van Hoecke, M. (2014), 'Do "Legal Systems" Exist? The Concept of Law and Comparative Law', in: S. Donlan& L. HeckendornUrscheler (eds.), Concepts of Law, Dartmouth: Ashgate,ch. 3, p. 43-57.

34. West, M.D. (2005), Digital Government: Technology and Public Sector Performance. Princeton University Press.

35. Wheeler, D.(2006), "Digital governance and Democratization in the Arab World", in Anttiroiko A.-V and Malhia M., Encyclopedia of Digital Government, London Idea Group Reference pp. 327-336

36. Wheeler, D. (2001). New technologies, old culture: A look at women, gender and the Internet in Kuwait. In C. Ess& F. Sudweeks (Eds.), Culture, Technology, Communication: Towards an Intercultural Global Village (pp. 187-212). New York: Suny Press;

37. Wheeler, D. (2003). The Internet and the Politics of Youth in Kuwait. Journal of Computer Mediated Communication, 18(2). Retrieved from www.ascusc.org/jcmc/vol8/ issue2/wheeler.html

38. Wheeler, D. (2004a, June 16). The Internet in the Arab World: Digital divides and cultural connections. Lecture presented at the Royal Institute for Interfaith Studies, Amman, Jordan. Retrieved March 15, 2005, from http://www.riifs.org/guest/lecture_text/internet_n_arab world_all_txt.htm

39. Wheeler, D. (2004b). Blessings and curses: Women and the Internet in the Arab World. In N. Sakr (Ed)., Women and the Media in the Middle East (pp. 138-161). London

40. Wimmer, M. A. (2002). "Integrated Service Modeling for Online One-stop Government". Electronic Markets,12 (3), 149–156.

41. World Bank. (2003). Definition of E-Government. Retrieved November 11 2007 from Web site: http://www1.worldbank.org/publicsector/egov/definition.htm.
42. World Bank (2022).GovTech Maturity Index: Trends in Public Sector Digital Transformation, December 2022)file:///G:/P1694820bcef0903e091160315d2050d03b.pdf
43. Yildiz, M. (2007). "E-government research: Reviewing the literature, limitations, and ways forward". Government Information Quarterly, 24(3), 646-665.
44. Zhdanov, A.A.(2006), 'Transplanting the Anglo-American Trust in Russian Soil', Review ofCentral and Eastern European Law, p. 179-231.
45. Zittrain, J., & Edelman, B. (2002). Documentation of Internet filtering in Saudi Arabia. Berkman Center for Internet and Society. Retrieved February 5, 2005, frromhttp://cyber.law.harvard.edu/filtering/saudiarabia/
46. Zweigert,K.&H. Kötz(1998), Introduction to Comparative Law, Oxford: Clarendon Press.

ON THE WAY TO A NEW MODEL FOR DECISION-MAKING REGARDING CAPACITY EXPANSION IN SMALL AND MEDIUM SIZED FAMILY BUSINESSES: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT
In this article, the authors examine the factors involved in the decision-making process of small and medium-sized family businesses regarding capacity expansion. The study presents the results of a systematic literature review to show which factors influence decision-making in such businesses according to the authors of the selected papers. Additionally, the study investigates whether special factors unique to small and medium-sized family businesses influence any of the decision-making in connection with capacity expansion.
***Keywords:*** *family business, decision-making, capacity expansion, influencing factors, family business*

1. INTRODUCTION
Family companies are one of the most prevalent forms of business organizations worldwide. Therefore, their survival and growth are crucial, not only for the companies themselves but also for the entire economy. In the European Union, tenders support the investments and survival of small and medium-sized enterprises (Jansen et al., 2022). Due to the important role of family businesses in the economy and society, the possible transmission failure of family businesses can be a problem for politicians and economic decision-makers as well (Ferrari 2023). Decisions with long-term consequences are common in business, including family businesses and family relationships. The consequences are often not borne by the decision-maker. For example, the construction of a new part of the plant also affects the business results of the following generations, since the increased capacity must be used for sustainability. Research by De Oliveira and Jacobson (2021) suggests that decisions are significantly influenced by the subject matter; for example, the participants in their study were found to be more impatient in financial decisions. Family businesses differ from non-family businesses in their financial decision-making. These unique financial differences arise from the basic behaviour of family firms (Jansen et al., 2022). This paper aims to explore the factors influencing the decision-making processes of family businesses concerning capacity expansion. The research question is also derived from this: What factors influence the decision-making in family businesses concerning capacity expansion? The paper will also demonstrate the biases that affect decision-making in family businesses. The article presents a comprehensive systematic literature review conducted by using the Scopus database. It presents the advantages and limitations of the selected papers, provides a narrative summary, an overview of the contents of the selected papers, and answers the research question.

2. METHODOLOGY

A Systematic literature review (SLR) is the process of analyzing, evaluating, and synthesizing journal articles and scientific works filtered and selected according to specific criteria to answer a research question (Smith, 2018). SLR is a detailed search for relevant studies on a particular topic that are evaluated and synthesized using a predetermined and explicit method. By reviewing the literature, the topic can be summarized, research questions can be formulated, and unknown areas that need further exploration can be identified (Rowley & Slack, 2004; Webster & Watson, 2002). A comprehensive systematic review is a literature review that defines the publication time frame of the articles in a specific database or databases (Reynen et al., 2018).
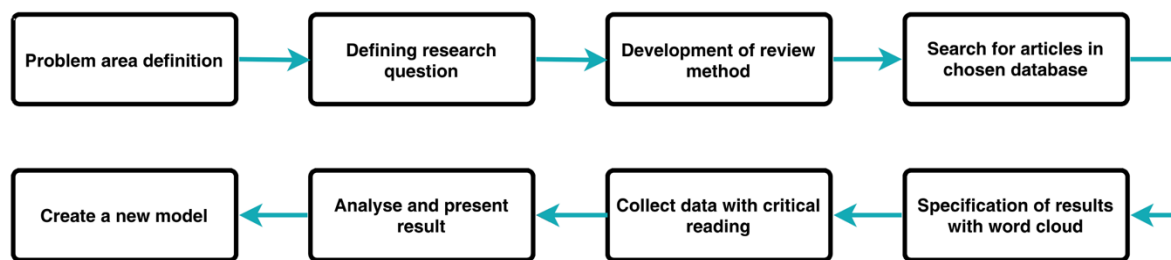
Figure 1: The steps involved in the literature review process.
(Source: Own compilation)

As depicted above, our research aims at answering the following research question: What factors influence the decision-making of family businesses regarding capacity expansion based on the SLR? To answer this research question, a systematic literature review was conducted using the Scopus database to collect and categorize relevant articles. The keywords used were: family business, decision making, capacity expansion

	Keyword Queries in Scopus
Initial Articles	1561
Open access	376
Publication year, language	134
Subject area	89
Scimago journal ranking	37
Wordcloud	25

Table 1: Provides details of the article number selection process.
(Source: Own compilation)

A combined search using all the keywords did not yield any results. The word "capacity" was then removed, resulting in one hit. Next, the word "expansion" was removed, which resulted in six hits. Using only "Family business" and "Decision making," a search produced 1561 results. A separate search for the keywords "capacity expansion" resulted in 39 hits, but none of them met the research criteria. The search results were filtered using open access, publication date 2020-2023, article and review category, and Business, Economics and Social Sciences topics. From the filtered results, only articles published in Q1 category journals were selected, leaving 37 results. These results were further filtered based on topic, and with the help of wordclouds, 25 articles met the criteria.

Journal	Article
European Journal of Family Business	3
Journal of Family Business Management	2
Long Range Planning	2
Family Business Review	1
Journal of Family Business Strategy	1
Journal of Innovation and Knowledge	1
Financial Analysts Journal	1
International Entrepreneurship and Management Journal	1
International Journal of Entrepreneurial Behaviour and Research	1
Journal of Business Ethics	1
Journal of Business Research	1
Journal of Economic Behavior and Organization	1
Journal of Economic Studies	1
Journal of Family Business Strategy	1
Journal of Management Information Systems	1
Journal of Small Business Management	1
Management Research Review	1
Small Business Economics	1
Society and Natural Resources	1
Systems Research and Behavioral Science	1
Wine Economics and Policy	1
Summary	**25**

Table 2: List of occurrences of articles in journals
(Source: Own compilation)

Table 2 shows the list of the most frequently occurring journals, with only three repetitions found among the 25 sources, this indicates the diversity of the topic. Three articles appeared in the European Journal of Family Business, while two each appeared in the Journal of Family Business Management and the Long Range Running magazine.

3. REVIEW BASED ON THE SELECTED LITERATURE

Kathuria et al. (2023) examined the IT investments of family businesses and found that family businesses differ in their intentions and behaviour because of wealth and social status. They are more conservative in their strategic decisions compared to non-family businesses, as they strive for long-term stability. IT investments present them with a particularly great challenge as they are risky but essential in the long term. Research confirms that if a professional executive is appointed to lead the company, the risk-averse behaviour of family businesses is reduced, but close control is transferred to the appointed manager. Based on research conducted in Latin America and the Caribbean, the intensity of socio-emotional wealth (SEW) increases in a volatile, uncertain, complex, and ambiguous (VUCA) environment. SEW, in itself, influences decision-making and approaches to managing performance risks and risk-taking risks. In this context, the effect of SEW appears even more intensively (Gomez-Mejia et al., 2023). The desire to achieve business and family goals also determines the strategic decision-making of family members in management and has an impact on the internationalization strategy as well (Urkiola & Alayo, 2022). According to Wei and Chen's (2023) article, the innovation performance of family businesses is positively influenced if the top management team is heterogeneous, i.e., it contains both family members and non-family members. The knowledge of managers outside the family supports decision-making processes and innovation processes,

and supports the balance of economic goals. The attitude of family businesses affects employees; the ethical behavior that develops in the organization affects the success or failure of business decisions. According to Reck et al. (2021), ethical decisions must be examined at the level of the individual, and this determines the general decision-making status of the organization. To help increase the organizational identity (OI) of non-family employees working in family businesses, Hsueh et al. (2022) research indicates that involvement in decisions has a positive effect. Morone et al. (2022) examined the similarities/differences between individual and group decision-making in their article. According to their research, there is no difference between the two, but according to other research (Kahnemann, 2011), group decision-making may have distortions resulting from group dynamics and the compulsion to comply with the leader. Jansen et al. (2022) presented the elements of the socio-emotional wealth perspective of family businesses in the pecking order theory model, and their results show that SEW plays a decisive role in making financing decisions. The capital requirement of a possible capacity expansion investment was analyzed by Jansen et al. (2022), first of all, with internal financing, then debt financing, followed by family capital, and finally external capital. Decision-making related to capacity expansion can be classified as a set of strategic decisions. According to Brundin and Languilaire (2022), the management of emotional boundaries affects the quality of strategic decisions. Humphrey et al. (2021), based on the psychology of family business management, examined how the values, biases, and heuristics of the members of the family business influence strategic decision-making and the results of the family business. Through the MICOM approach (Measurement Invariance of Composite Models), Hernández-Perlines et al. (2020) concluded that innovative decision-making in transgenerational family businesses is most effective in the case of the second generation. According to the research of Metsola and Kuivalainen (2021), long-term decisions, such as decisions related to capacity expansion, are also influenced in family businesses by the regional orientation, knowledge base, and its transfer, bifurcation-bias, and perseverance of family managers. The study by Ferrari (2023) highlights that social norms play an important role in the strategic decision-making processes of family companies. In his research, he also covered the role of the transmission of decision-making attitudes between generations. According to the model for the normative theory of family business decision-making developed by Craig and Newbert (2020), only those family businesses can survive that strive to create socioeconomic (not socioemotional) wellbeing in the long term. According to their research, SEW-based decisions are primarily due to the private motivation of the family and only secondarily serve the interests of the economy. Camisón-Zornoza et al. (2020), similarly view the role of the family in management negatively. In their research, they divided the decision-making authority of family firms into three factors: the capital structure, the management and control structure of the enterprise, and the management structure of the family itself. Their survey among Spanish family companies confirms that the introduction of a family council is an effective solution for improving the ability to innovate. According to the American research of Hazenberg (2020), four components influence the change in the market share of family businesses. Two of them are performance-driven, and two are flow-driven. The most prominent of the four is the "Excess Flows" component, which measures the flow of family businesses. Gómez (2020) states that, according to family businesses, the most important thing to overcome barriers is the willingness to change and renew. If long-term operation is taken into account, even in the case of decisions related to capacity expansion. Based on in-depth interview research in Germany, Neffe et al. (2020) draw attention to the fact that the cooperation of family and non-family managers is of particular importance, as their behaviour differs in three main areas: decision-making style, communication versatility, and self-awareness. Research has been carried out in connection with the procedural utility theory, which compares the satisfaction and driving forces of predecessors and successors in family businesses.

The result show that the successors are less satisfied with work and decision-making (Lauto et al., 2020). The concept of family networks or family 3.0 was created from the combination of family business research, organizational studies, and system theory from several family business owners, taking into account the shareholder structure (Kleve et al., 2020). In the case of family 3.0, the communication channels must be developed so that the decision-making time does not drag on. Innovation investments of family businesses have an impact on the economy. Migliori et al. (2020), on a representative survey of family businesses in Italy (1,078 samples), find that the demand-pull and technology-push effects positively influence the willingness of family businesses to innovate and invest. Therefore, demand-pull and technology-push can also positively influence the willingness of family businesses to expand capacity. Specifically, according to the research on winemaking family businesses, the composition of the top management team (TMT) greatly influences the entry into the international market. According to the results of the surveys, the process of internationalization is slower in the case of a TMT with a high proportion of family members (Olmos & Malorgio, 2020). Also from the wine region, Browne et al. (2020) conclude that non-economic aspects must also be taken into account in decision-making in the case of small and medium-sized family businesses, which make up the majority of wine businesses.

4. CONCLUSION

This article is aimed at examining the factors which influence decision-making processes related to capacity expansion in small and medium-sized family businesses. A systematic literature review was conducted to identify the factors that are mentioned in the selected literature.

	SEW	Heterogen TMT	Generations
Innovation	-/+	+	+
Development	-/+	+	-/+
Investment	-/+	+	+
Internationalization	-/+	+	+

Table 3: Negative/positive effect of factors influencing decisions related to capacity expansion
(Source: Own compilation)

Table 3 summarizes the negative and positive effects of factors that influence decision-making related to capacity expansion. Family businesses are influenced by different factors than non-family businesses, and this is widely agreed upon in the literature. The articles were collected from the Scopus database using keywords, and the results were narrowed down to 37 articles through additional filtering. A systematic literature review was then conducted based on 25 articles, using a word cloud. Most of the 25 articles presented the unique characteristics of family companies, the impact of socio-emotional wealth, the usefulness of a heterogeneous top management team, and cooperation between generations. Socio-emotional wealth can have a positive or negative effect on each of the four decision groups related to capacity expansion. All sources agree that SEW fully differentiates family businesses from non-family businesses, but the research results differ as to whether its effect is positive or negative. in a positive case, prioritizing the livelihood of the family motivates development, in a negative case, risk-avoiding behavior in order to preserve the reputation of the family name can discourage development. According to all the above researches, the composition of a heterogeneous top management team has a positive effect on decision-making. The different point of view of managers free from family ties positively influences decisions.

Similar to the heterogeneous TMT, the cooperation of several generations has a positive influence on decision-making due to the different points of view and life experiences, however, the picture regarding development is mixed, here it can also have a negative effect during the coordination of the cooperation of the generations, the necessity of the developments and the implementation time.
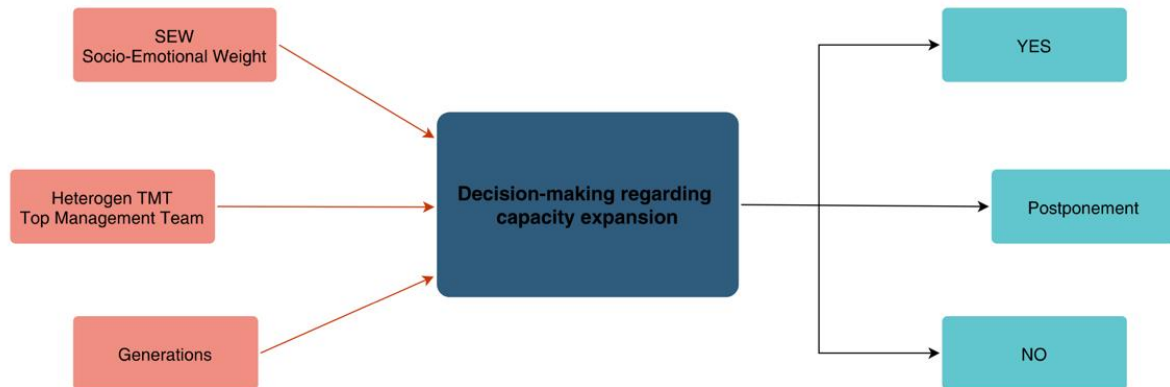

Figure 2: Model of decision-making regarding capacity expansion, in small and medium sized family businesses
(Source: Own compilation)

Figure 2 presents a model of decision-making regarding capacity expansion in small and medium-sized family businesses. The analyzed articles clearly demonstrate that decision-making necessary for family businesses to enter the innovation, development, investment, and international markets is influenced by the factors presented in the model.

5. FUTURE RESEARCH DIRECTIONS

The role of family businesses in the economy, society and employment is significant. The aim of the research was to examine the factors influencing their decisions with a systematic literature review and to display them in a model. Future research should focus on testing the model using qualitative and quantitative methods.

LITERATURE:
1. Browne, M., Balan, P., & Lindsay, N. J. (2020). The business models of small family wineries. *Journal of Family Business Management, 11*(2), 223–237. https://doi.org/ 10.1108/jfbm-10-2019-0071
2. Brundin, E., & Languilaire, J. E. (2022). When the display of emotion is not enough: An emotion boundary management perspective on the quality of strategic decisions. *Long Range Planning*, 102245. https://doi.org/10.1016/j.lrp.2022.102245
3. Camisón-Zornoza, C., Forés-Julián, B., Puig-Denia, A., & Camisón-Haba, S. (2020). Effects of ownership structure and corporate and family governance on dynamic capabilities in family firms. *International Entrepreneurship and Management Journal, 16*(4), 1393–1426. https://doi.org/10.1007/s11365-020-00675-w
4. Craig, J. B., & Newbert, S. L. (2020). Reconsidering socioemotional wealth: A Smithian-inspired socio-economic theory of decision-making in the family firm. *Journal of Family Business Strategy, 11*(4), 100353. https://doi.org/10.1016/j.jfbs.2020.100353
5. De Oliveira, A. C. M., & Jacobson, S. (2021). (Im)patience by proxy: Making intertemporal decisions for others. *Journal of Economic Behavior and Organization, 182*, 83–99. https://doi.org/10.1016/j.jebo.2020.12.008

6. Ferrari, F. (2023). The postponed succession: an investigation of the obstacles hindering business transmission planning in family firms. *Journal of Family Business Management.* 13(2), 412-431. https://doi.org/10.1108/jfbm-09-2020-0088

7. Gomez-Mejia, L. R., Mendoza-Lopez, A., Cruz, C., Duran, P., & Aguinis, H. (2023). Socioemotional wealth in volatile, uncertain, complex, and ambiguous contexts: The case of family firms in Latin America and the Caribbean. *Journal of Family Business Strategy*, 100551. https://doi.org/10.1016/j.jfbs.2022.100551

8. Gómez, J. L. (2020). Barriers to change in family businesses. *European Journal of Family Business, 10*(1), 56–65. https://doi.org/10.24310/ejfbejfb.v10i1.7018

9. Hazenberg, J. G. (2020). A New Framework for Analyzing Market Share Dynamics among Fund Families. *Financial Analysts Journal, 76*(3), 110–133. https://doi.org/10.1080/0015198x.2020.1744211

10. Hernández-Perlines, F., Ribeiro-Soriano, D., & Rodríguez-García, M. (2020). Transgenerational innovation capability in family firms. *International Journal of Entrepreneurial Behaviour & Research, 27*(1), 1–25. https://doi.org/10.1108/ijebr-08-2019-0497

11. Hsueh, J. W., Campopiano, G., Tetzlaff, E., & Jaskiewicz, P. (2022). Managing non-family employees' emotional connection with the family firms via shifting, compensating, and leveraging approaches. *Long Range Planning*, 102274. https://doi.org/10.1016/j.lrp.2022.102274

12. Humphrey, R. H., De Massis, A. V., Picone, P. M., Tang, Y., & Piccolo, R. F. (2021). The Psychological Foundations of Management in Family Firms: Emotions, Memories, and Experiences. *Family Business Review, 34*(2), 122–131. https://doi.org/10.1177/08944865211012139

13. Jansen, K., Michiels, A., Voordeckers, W., & Steijvers, T. (2022). Financing decisions in private family firms: a family firm pecking order. *Small Business Economics*. https://doi.org/10.1007/s11187-022-00711-9

14. Kathuria, A., Karhade, P. P., Ning, X., & Konsynski, B. R. (2023). Blood and Water: Information Technology Investment and Control in Family-owned Businesses. *Journal of Management Information Systems, 40*(1), 208–238. https://doi.org/10.1080/07421222.2023.2172770

15. Kleve, H., Köllner, T. G., Von Schlippe, A., & Rüsen, T. A. (2020). The business family 3.0: Dynastic business families as families, organizations and networks—Outline of a theory extension. *Systems Research and Behavioral Science, 37*(3), 516–526. https://doi.org/10.1002/sres.2684

16. Lauto, G., Pittino, D., & Visintin, F. (2020). Satisfaction of entrepreneurs: A comparison between founders and family business successors. *Journal of Small Business Management, 58*(3), 474–510. https://doi.org/10.1080/00472778.2019.1660937

17. Metsola, J., & Kuivalainen, O. (2021). International Business Decision-Making in Family Small and-Medium-Sized Enterprises. *European Journal of Family Business, 11*(2). https://doi.org/10.24310/ejfbejfb.v11i2.13842

18. Migliori, S., De Massis, A. V., Maturo, F., & Paolone, F. (2020). How does family management affect innovation investment propensity? The key role of innovation impulses. *Journal of Business Research, 113*, 243–256. https://doi.org/10.1016/j.jbusres.2020.01.039

19. Morone, A., Santorsola, M., & Tiranzoni, P. (2022). Deal or No Deal: comparing individual and group choices in a risky context. *Journal of Economic Studies*. https://doi.org/10.1108/jes-10-2022-0511

20. Neffe, C., Wilderom, C. P., & Lattuch, F. (2020). Leader behaviours of family and non-family executives in family firms. *Management Research Review, 43*(7), 885–907. https://doi.org/10.1108/mrr-12-2018-0468

21. Olmos, M. F., & Malorgio, G. (2020). The Speed of the Internationalisation Process and the Institutional Networks of Family SMEs in the DOC Rioja Wine Industry. *Wine Economics and Policy*. https://doi.org/10.36253/web-8371

22. Reck, F. S., Fischer, D., & Brettel, M. (2021). Ethical Decision-Making in Family Firms: The Role of Employee Identification. *Journal of Business Ethics, 180*(2), 651–673. https://doi.org/10.1007/s10551-021-04774-8

23. Reynen, E., Robson, R., Ivory, J., Hwee, J., Straus, S. E., Pham, B., & Tricco, A. C. (2018). A retro- spective comparison of systematic reviews with same-topic rapid reviews. *Journal of Clinical Epidemiology*, 96, 23–34. https://doi.org/10.1016/j.jclinepi.2017.12.001

24. Rowley, J. & Slack, F. (2004). Conducting a litera- ture review. *Management Research News*, 27(6), 31–39.

25. Smith, B. J. (2018). Doing a Literature Review: Releasing the Research Imagination. *Journal of Perioperative Practice*, 28(12), 318. https://doi.org/10.1177/1750458918810149

26. Szaboova, L., Gustavsson, M., & Turner, R. A. (2022). Recognizing Women's Wellbeing and Contribution to Social Resilience in Fisheries. *Society & Natural Resources*, 35(1), 59–74. https://doi.org/10.1080/08941920.2021.2022259

27. Urkiola, N. E., & Alayo, M. (2022). Internationalization and Family Firms: The Influence of Family Involvement on Exports. *European Journal of Family Business, 12*(2), 173–183. https://doi.org/10.24310/ejfbejfb.v12i2.14567

28. Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, 26(2), 13–23.

29. Wei, X., & Chen, L. (2023). Structural power distribution between family and non-family executives and innovation performance in family firms. *Journal of Innovation & Knowledge, 8*(1), 100304. https://doi.org/10.1016/j.jik.2022.100304

DARK TOURISM IN INDIA: SIGNIFICANCE AND CHALLENGES

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ABSTRACT
Dark tourism, a strand of tourism related to suffering, bloodshed, war zones, cemetery sites, international tragedy, death and moribund places related to history, cultural and heritage tourism. This type of leisure, that one can somewhat relate to morbid curiosity, presents, nevertheless, a huge growth potential, even if it is understood that educating people is needed, in order to avoid the building of a wrong set of perceptions towards these particular sites. Visitors know India for its best touristic sites, like Taj Mahal, Qutub Minar, Rajasthan desert and many other beautiful sites, which many tourists across the globe aim to visit. However, there is little information regarding dark and grief touristic sites, where people who are fascinated by this segment, can visit and enhance their dark experience, consequently allowing adding value to India socio-economic status. The main purpose of this paper is to evaluate the perception of local communities towards dark tourism. Furthermore, as there is a great need of further research with this regard, this research looks to find out ways how India can benefit from dark tourism for its own. For this purpose, authorities and populations should be aware of the importance of promoting this segment, in order to improve the lives of their communities, especially in rural areas of the country.
Keywords: Dark Tourism, Local Communities Development, Business Growth, India

1. INTRODUCTION
Dark tourism may be classified as an act or practice of tourists travelling to places of tragedy, death or suffering (Foley & Lennon, 1996). Indeed, this strand of tourism is related to dark events, linked to populations suffering, bloodshed, war zones, cemetery sites, international tragedy, death or moribund places related to history, cultural and heritage tourism. This type of leisure, that one can somewhat relate to morbid curiosity, shows, nevertheless, a huge growth potential, even if it is understood that educating people is needed, in order to avoid the building of a wrong set of perceptions towards these particular sites. This growth potential is becoming very visible, as tourism numbers for the dark tourism have been growing significantly.

For example, more than 2.1 million tourist visited Auschwitz memorial in 2018 and 3.2 million tourists visited ground Zero 9/11 memorial annually. According to Biran et al. (2011), despite its growing popularity there is still a limited knowledge of dark tourism as a multi-faceted phenomenon. Since its comprehensive and more in-depth understanding is lacking in modern research, many researchers have advised that it is important to understand its empirical research from tourist perspective to understand their motivations and experiences (Seaton & Lennon, 2004, Sharpley & Stone, 2009, Zhang et al., 2016). Dark tourism can be seen for few purposes like political reasons, for educational purposes, reminisce reason, economic development or entertainment and also can be observe as reminder of own mortality and fragility (Stone, 2012). One can believe that experiencing dark tourism tourist can appreciate to live more and feel empathy with victims (Stone, 2013). Dark tourism is a complex phenomenon that has its own merit. People have often shown enthusiasm to ``death`` and ``disaster`` due to emotional bonding after the experience (Yuill, 2003) and curiosity to something unknown (Lennon & Foley, 2000). Battlefield tourism is also a form of dark tourism that involves places and cities associated with war zones or participating in battlefield enactment activities. War museums uses language to show past conflicts and wars to tourist to help evoke personally emotional responses from people who have not been through such conflicts and war personally. This paper aims to evaluate the perception of local communities towards dark tourism. Furthermore, as there is a great need of further research with this regard, this research looks to find out ways how India can benefit from dark tourism for its own.

2. DARK TOURISM ROOTS AND NATURE
Early dark tourism goes back to Roman gladiator games, guided tours to visit and watch hangings in England and medieval executions (Stone, 2006). Dale & Robinson, 2011 also confirmed that death and conflict associated travels go dates back for centuries. Even nowadays, tourists are so fascinated by death and conflicts thus visit sites like Ground zero 9/11 or John F. Kennedy death site in Dallas (Foley & Lennon, 1996, Strange & Kempa, 2003). Abandoned sites like prisons and punishment locations are also popular amongst tourist who are looking for new attractions (e.g. Pentridge in Melbourne, Australia, vid. Foley & Lennon, 1996). However, the term dark tourism did not get introduced to researchers until 1996, which provoked many later research efforts on this topic (Light, 2017). Based on the past study available we can categorize seven types of dark tourism such as:
1) Cemetery tourism - Venbrux (2010)
2) Holocaust tourism - Stone (2012)
3) Battlefield tourism - Dunkley, Morgan &Westwood (2011), Ryan (2007)
4) Slavery tourism – Dann & Seaton (2001)
5) Monument tourism - Petr (2015)
6) Prison tourism - Wilson (2011)
7) Black spot tourism - Rojek (1993)

By categorizing, we can observe that term dark tourism encompasses various different aspects of activities and destinations. It is very important to understand tourist main motivation and intention to predict the what exactly they need. (Seaton, 1999) discovered that tourist who are attracted by locations related to world war or Holocaust are motivated by knowledge of history and to see the truth about that particular period. (Lennon & Foley, 2000), studied a case of museum of massacre and found that tourists are keen to find and understand the truth behind an even and hence condemn the tragedy. Another case study by Preece & Price (2005) about the prison tourism found that tourist are motivated learning history, educational opportunities and curiosity to visit the prison. On the other hand, a study about museum tourism in Lithuania by Wight & Lennon (2007), found out that tourists are keen to know about the country.

It is rather clear that educational and memorial purposes comprised of the majority of dark tourism motivation (Yuill SM, 2003). According to Miller & Gonzalez (2013), the extreme side of dark tourism is death tourism. This radical type of dark tourism occurs when an individual travel to places to end his/her life often assisted by medical suicide. One can argue that it is not directly related to dark tourism, but considering the offspring of the nature, and being a travel activity, hence could be related to dark tourism. Based on these literatures, this study can conclude that the dark tourism is a complex phenomenon. Individuals engaged in dark tourism for different purposes, but mainly for education and remembrance purposes. Through dark tourism experiences, tourists are able to evoke emotional responses that satisfied their inherent needs. Dark tourism is also able to provide economic meaning to old places, such as battlefield, which makes its preservation worthwhile.

3. RESEARCH ON THE SIGNIFICANCE OF DARK TOURISM FOR INDIA

This study is based on an exploratory and descriptive research, which relied on the secondary information data gathered and collected by available literature online, newspapers, and magazines: Following the collection of relevant data, findings have been interpreted and hence the conclusions were drawn. Several working reports and papers of well-known authors and institutions on tourism in India, and articles published by famous journals, and by the ministry of tourism of India, have been considered for this study as well. Dark tourism concept in India is somehow difficult to accept as it sounds weird to visit sites where people have lost their lives or has lost someone dear to one who just cannot imagine to visit the site as a tourism attraction. As Wang et al. (2017) note, there is always the risk that a dark tourism destination may be shocking to locals, dealing with death or suffering of survivors. However, apparently, dark tourism is catching a significant niche trend in modern India, the history of India has witnessed multiple rulers, long battles, massacres and the variety of terrorism attacks that are often argued rather than celebrated. Audience who are not found of reading history books can avail one hand opportunities to visit these historical sites and have their own visual experience by visiting those sites and feel the pain of the past generation and confirm the philosophy that "Seeing is believing". India has a number of strong potential dark destination sites. Some good examples follow. One can start with Amritsar, where, in 1919, hundreds of peaceful Indians were massacred by British military forces (vid. Fig. 1).

Figure 1: Jallianwala Bagh Massacre, in Amritsar
(Source: The Sentinel (2023))

Other good example is Kuldhara village in Rajasthan, where 83 villagers lost their lives in just one night (Figure 2). This place is considered to be haunted and is abandoned since early XIXth century. In recent years, local authorities have been raising efforts in order to promote this place as a touristic one.

Figure 2: Kuldhara: The Ghost Village
(Source: Times of India (2018))

The haunted Savoy Hotel, in Mussoorie, shown below in Figure 3, is also a very good example. This hotel, where visitors can actually stay, is being, for a long time, a haunted place, with various unusual activities been observed and recorded.

Figure 3: Savoy Hotel in Mussoorie
(Source: The Dehradun (2023))

Finally, shown below, in Figure 4, is the case of Taj Mahal Palace Hotel in Mumbai, which became worldwide known when terrorists infamously attacked this landmark Indian hotel in 2008.

Figure 4: Taj Mahal Hotel, Mumbai, attacked by terrorists in 2008
(Source: The Indian Express (2023))

It is important to highlight that the examples above are merely illustrative. There are a lot more dark tourism sites in India of a great significance and great potential for tourism growth (vid. e.g. Times Travel, 2018). It is remarkable also to note that dark tourism is less and less of a minor niche market. According to Times of India (2018), dark tourism has been one the reason for a 10% YOY growth in India travellers to offbeat European destinations. For Karan Anand, Head of Relationship of Cox & Kings, in an interview with The Hindu (2017), a famous newspaper in India, contemporarily a growing demand is witnessed for the creepy characters, mysterious places and unpleasant history, people find pleasure as while others are more interested to find out the truth behind the old stories and confirm themselves what is truth and folk tells. The trend has picked up in last few years and is attracting tourists between the age of 35-50.

4. CONCLUSION

With this paper, the authors discussed the relevance of a new niche of tourism, namely "Dark tourism", while examining Indian's perception towards this sensitive topic. This strand of tourism business is based on past and historical events, which have taken place in India, particularly when Mughal empire ruled, but also after, when British ruled as well. Such ruling resulted over many events, bringing places that are considered to be dark, as the consist on sites where deaths and invasions were frequent on those past times. Although they present fine business opportunities, such places and event do also can play a very negative role while dealing with the sentiment of the locals. With this regard, governments and media have a crucial rule to educate people, about such sites, as they should also be considered as a source of income, that can help to deal with socio-economic issues that local population face. The research on the topic of dark tourism faces several limitations and challenges. In regard to this paper, the main limitation was the lack of comprehensive literature on this subject. Nevertheless, there is enough evidence and literature available on religious, leisure and entertainment. However, since the concept of dark tourism is new, hence there is scarcity on finding literature. The authors of this paper hope to have contributed to fill this gap in some way. The topic itself presents limitations. Considering the main obstacles, one can argue that there is not enough advertisement being done by governments. In the case of India, that could result from the fear of local populations reaction towards their sentiments, as many local communities are not aware of dark tourism and its economic effects. Therefore, it is suggested here that governments should help in promoting this segment of tourism.

Some additional obstacle could be lack of facilities, basic services, guidance, conservation, inappropriate infrastructure and maintenance of those dark touristic historical and abandoned sites. The local communities' cooperation is minimal, due to fear, feelings, emotions and physiological trench. In resume, there are plenty of dark sites in India, full of great significance and great potential for tourism growth. Nevertheless, an effective marketing strategy and awareness, which can improve people perception about these sites, is needed. If implemented, it will help local communities for job opportunities and existing local businesses growth and also help bring in foreign exchange reserves, which are fundamental to any economy. Furthermore, if such funds are regulated properly, they can be used to eradicate poverty and help people who have suffered and have been affected by negative events. Dark tourism can also serve as a tool to educate people about having wrong perception about those sites and clear their thoughts and help them intellectualize and capitalize benefits, coming from negative situations.

LITERATURE:

1. Biran, A., Poria, Y., Oren, G. (2011), Sought experiences at dark heritage sites, Annals of Tourism Research, Vol. 38, pp. 820-841, doi: 10.1016/j.annals.2010.12.001.
2. Dale, C., Robinson, N. (2011), Research themes for tourism, Dark Tourism, CABI, pp. 205-2017.
3. Dann GMS, Seaton AV (2001), Slavery, contested heritage and thanatourism. Int J hospitality & tourism administration 2: 1-29.
4. Dunkley R, Morgan N, Westwood S (2011) Visiting the trenches: Exploring meanings and motivations in battlefield tourism. Tourism Management 32: 860-868.
5. Foley, M., Lennon, J. (1996), JFK and dark tourism: a fascination with assassination, International Journal of Heritage Studies, Vol. 2 No. 4, pp. 198-211.
6. Lennon J, Foley M (2000), Dark Tourism: The Attraction of Death and Disaster. Continuum, London.
7. Light, D. (2017), "Progress in dark tourism and thanatourism research: an uneasy relationship with heritage tourism", Tourism Management, Vol. 61, pp. 275-301, doi: 10.1016/j.tourman.2017.01.011.
8. Miller, D., Gonzalez, C. (2013), When death is the destination: the business of death-tourism--despite legal and social implications, International Journal of Culture, Tourism and Hospitality Research, Vol. 7 No. 3, pp. 293-306.
9. Petr C (2015), How heritage site tourists may become monument visitors. Tourism Management 51: 247-262.
10. Preece T., Price G. (2005), Motivations of Participants in Dark Tourism: A Case Study of Port Arthur, Tasmania, Australia, pp. 191–98 in Ryan C., Page S., Aicken M. (eds) Taking Tourism to the Limits: Issues, Concepts and Managerial Perspectives. Amsterdam: Elsevier.
11. Rojek C (1993), Ways of Seeing-Modern Transformations in Leisure and Travel. Macmillan, London.
12. Ryan C (2007), Battlefield Tourism: History, Place and Interpretation. Elsevier, Oxford.

13. Seaton, A., Lennon, J.J. (2004), Thanatourism in the early 21st century: moral panics, ulterior motives and ulterior desires", in Singh, T. (Ed.), New Horizons in Tourism: Strange Experiences and Stranger Practices, CABI Publishing, Cambridge, MA, pp. 63-82.
14. Seaton, AV (1999), War and thanatourism: Waterloo 1815-1914. Annals of Tourism Research 26(1):130-158.
15. Sharpley, R., Stone, P. (2009), The Darker Side of Travel: The Theory and Practice of Dark Tourism, Channel View Publications, Bristol.
16. Stone PR (2012), Dark tourism and significant other death: towards a model of mortality mediation. Annals of Tourism Research 39: 1565-1587.
17. Stone PR (2013), Dark tourism scholarship: A critical review. International Journal of Culture, Tourism and Hospitality Research 7: 307-318.
18. Stone, PR (2006), A Dark Tourism Spectrum: towards a typology of death and macabre related tourist sites, attractions and exhibitions, Tourism: An Interdisciplinary International Journal, Vol. 54 No. 2, pp. 145-160.
19. Strange, C., Kempa, M. (2003), Shades of dark tourism: Alcatraz and Robben Island, Annals of Tourism Research, Vol. 30 No. 2, pp. 386-405.
20. The Dehradun (2023). Savoy hotel Mussoorie haunted place. Retrieved in May 2023, Available at: https://thedehradun.in/savoy-hotel-mussoorie-haunted-place/
21. The Hindu (2017). "Dark" tourism: walk through the valley of the shadow of death. Retrieved in May 2022, Available at: https://www.thehindu.com/life-and-style/travel/walk-through-the-valley-of-the-shadow-of-death/article19918095.ece
22. The Indian Express (2023). 26/11 Mumbai terror attacks: A brief timeline. Retrieved in May 2023, Available at: https://indianexpress.com/article/india/26-11-mumbai-terror-attacks-timeline-of-what-happened-during-64-hours-of-operation-7642091/
23. The Sentinel (2023). Retrieved in February 2023, Available at: https://www.sentinelassam.com/national-news/103-years-of-jallianwala-bagh-massacre-know-what-happened-on-that-day-587346.
24. Times of India (2018). About Dark tourism. Retrieved in May 2022, Available at: https://timesofindia.indiatimes.com/travel/destinations/kuldharathe-ghost-village/articleshow/37241961.cms
25. Times Travel (2018). Dark Tourism in India—walking through the alleys of India's dark past. Retrieved in February 2023. Travel Trends India. Available at: https://timesofindia.indiatimes.com/travel/destinations/dark-tourism-in-indiawalking-through-the-alleys-of-indias-dark-past/articleshow/66107504.cms
26. Venbrux, E. (2010), Cemetery tourism: coming to terms with death? La Ricerca Folklorica 61: 41-49.
27. Wang, S., Chen, S., Xu, H. (2017). Resident attitudes towards dark tourism, a perspective of place-based identity motives. Current Issues in Tourism. 22. 1-16.
28. Wight C, Lennon J., (2007), Selective interpretation and eclectic human heritage in Lithuania. Tourism Management 28: 519-529.
29. Wilson, J. (2011), Australian prison tourism: A question of narrative integrity. History Compass 9: 562-571.
30. Yuill, SM (2003), Dark tourism: Understanding visitor motivation at sites of death and disaster. Texas A & M University.
31. Zhang, H., Yang, Y., Zheng, C., Zhang, J. (2016), "Too dark to revisit? The role of past experiences and intrapersonal constraints", Tourism Management, Vol. 54, pp. 452-464.

EMPIRICAL ANALYSIS OF DIGITALIZATION'S IMPACT ON THE ALBANIAN LABOR MARKET

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ABSTRACT

The use of digital technology in the economy to generate goods and services is referred to as job digitalization, also known as Industry 4.0. This is a cutting-edge technology that is only recently becoming popular. The benefits include not only increasing the speed and precision of future services but also dramatically changing the economy's marketplaces, particularly the market for human resources. Albania is a developing country that sought EU membership in June 2014. In this study, we will examine some of the Albanian labor market factors and how they have changed because of digitalization. We'll analyze the challenges, benefits, and drawbacks of new technological breakthroughs. Our results following an empirical analysis using linear regression showed that the use of fourth-generation technology increased employment.

Keywords: Digitalization, labor market, Industry 4, employment, factors

1. INTRODUCTION

Each industrial revolution had a significant impact on the job economy, according to research. As a result of changes in the professions, several conventional vocations have emerged, been discontinued, or diminished. All structural changes in the labor market have resulted in greater productivity as well as increased product and output quality and quantity. In terms of expectations, the new digital era has had the same influence as earlier labor-market developments. Historically, the use of new technology has resulted in massive societal and economic gains, as well as significant changes to the labor market. Skepticism about innovations and their consequences on work, on the other hand, is a characteristic of the current revolution (IV Industrial Revolution). Indeed, throughout history, we have seen not only widespread automation but also a constant process of new job creation, resulting in new employment options for humans. Digitization and artificial intelligence have long-term and major effects on the job market, particularly for unskilled people who must retrain to meet modern labor market demands. Although new technology may reduce the number of available jobs, this should not be a reason for alarm. As a result of technological advances, several new occupations have emerged. Digitalization, the apex of technical advancement, has had a significant impact on the economic success of many countries throughout the world.

This influence is linked not only to changes in how people think and act in all aspects of social and public economic life but also to the workforce's capabilities. The group that has "benefited" the most from this environment are digital nomads, people whose occupations are intimately linked to PCs (laptops, tablets) and who are at ease working from anywhere in the actual world. According to Rajnai and Kocsis (2017), the ramifications of the fourth industrial revolution's rapid technological advancement pose significant difficulties for society and policymakers. One of humanity's biggest fears about automation is job loss and the human workforce becoming uncompetitive with machines. According to Markus et al. (2015), technology will help people stay in or return to the labor force. Workplace computerization may destroy assembly and manufacturing jobs, but it will also create many new jobs, particularly in information technology (IT) and data science. To successfully implement Industry 4.0, businesses must retrain their workforces, redesign their organizational models, and embrace strategic approaches to recruiting and workforce planning. To close the inevitable IT skills gap, education systems must collaborate to generate greater skill sets. According to Ciffolilli and Muscio (2018), EU member states must adapt their innovation systems to Industry 4.0 trends while also fostering research and innovation excellence while allowing less-developed regions to benefit from the continuing industrial transformation. Albania, as a candidate member of the EU, is making strides in digitization. The purpose of this paper is to investigate the impact of digitalization on the labor market.

2. LITERATURE REVIEW

The twentieth century saw a fundamental transformation of labor market segments, with a significant shift to the service economy. Increasing demands for the quality of services and goods produced, on the one hand, and increasing demands for the speed with which services are supplied, on the other, are some of the important indicators of our country's corporate digitalization. As the demand for new technologies in the implementation of their business activities such as production and development, as well as supply and sales, grows, the digitization process is seen as challenging and costly for businesses. Automation, according to Acemoglu and Restrepo (2018), has a displacement impact, lowering worker demand and wages. It is offset, however, by a productivity effect induced by cost savings from automation, which increases demand for labor in non-automated tasks. Based on more severe possibilities (human aging and employment poverty), Susskind (2017) feels that the long-term influence of technology innovation on the labor market is equivocal. Byrne et al., 2017 propose a more balanced approach, suggesting that technological innovation can result in both job replacement and job growth. Reduced labor scarcity, according to Acemoglu and Restrepo (2017), motivates producers to create new employment where labor has a competitive advantage. According to the hypothesis that women have a comparative advantage in service-sector tasks compared to manual labor (Ngai and Petrongolo, 2015), an increase in the tertiary sector of the economy may have resulted in an increase in female participation rate by creating safer and more appealing jobs for women and stimulating demand for female workers. The service industry, in contrast to the manufacturing and agricultural industries, requires more interpersonal skills than manual ability. The service business has been profoundly impacted by digital technologies. Following the pandemic, important breakthroughs and developments in a variety of disciplines happened, as well as an increase in the use of e-banking services in Albania (Habili et al. 2022). Manufacturers can increase speed, flexibility, dependability, organization, and coordination by utilizing modern digital technology, even to the point of enabling self-managing factory operations (Dingley, 2018). The digital revolution, according to Pelari and Hoxhaj (2021), is increasingly becoming a driving factor in societal transformation.

In terms of the labor market, the post-pandemic digital revolution and sociocultural transformation laid the groundwork for three major transactions that are currently taking place: the digital transition, the environmental transition, and the demographic transition.

3. TRENDS OF THE LABOR MARKET IN ALBANIA
3.1. Labor Market Trends

The end of Albania's communist period and the country's transition to a market economy have resulted in substantial changes in the functioning of the labor market, which has faced significant obstacles and problems during the previous thirty years. In 1992, the greatest rate of unemployment was 26%. Despite solid economic development and a significant rise in the private sector's proportion of GDP over the previous decade, formal-sector job creation has been insufficient to keep unemployment in single digits. INSTAT numbers support the current developments in the labor market. In the previous ten years, employment (age 15-64) has increased by 3.8%, and the structure has changed. Agriculture and services employ the most people in the economy, accounting for over 80% of the working population in 2020. There has been a 2.9% increase in women's labor force participation rate (15+) relative to males over the years, as well as a movement in the amount of employment per sector. As a result of technological improvements, traditional industries such as agriculture and construction have faced a little decline in recent years. The outsourcing of traditional female domestic chores assisted the shift of women from the home to the job market, resulting in a rise in the number of educated women and women entering higher education. In reality, education differences are closing in industrialized nations, with more women pursuing higher education and spending more years in school.

Indicator	2012	2021
Labor force	1.064.291	1.411.308
Labor force participation rate (15 +)	Total 57.9 % Male 66.3 % Female 49.7 %	Total 59.8% Male 67,2 % Female 52.6 %.
Employment (age 15-64)	65.5%	69.3 %

Employment-based on activity	Services Total 30 %
	  a. Trade, Transportation, Accommodation and Food, and Business and Administrative Services 19 %
	  b. Public Administration, Community, Social, and other Services and Activities 11 %
	
	Agriculture 51.5 %
		Services Total 44.3%
		  a. Trade, Transportation, Accommodation and Food, and Business and Administrative Services 26.6%
		  b. Public Administration, Community, Social, and other Services and Activities 17.7%
		
		Agriculture 33.8 %

Unemployment rate	13.9 %	11.5%
Average monthly gross wage	50.092 ALL	57.191 ALL

Table 1: Labor market overview in Albania
(Source: INSTAT)

During 2021, the labor force is estimated to be 1,411,308 persons, where males account for 55.4 % of the labor force and females 44.6 %. The official unemployment rate for the age-group 15-74 years old is 11.5 %. The unemployment rate is 0.5 percentage points lower for males than females. Figure 1 shows the number of employees based on economic activities from 2016-2021. We can see that all market producers have the highest amount of employed followed by service producers, trade and services.
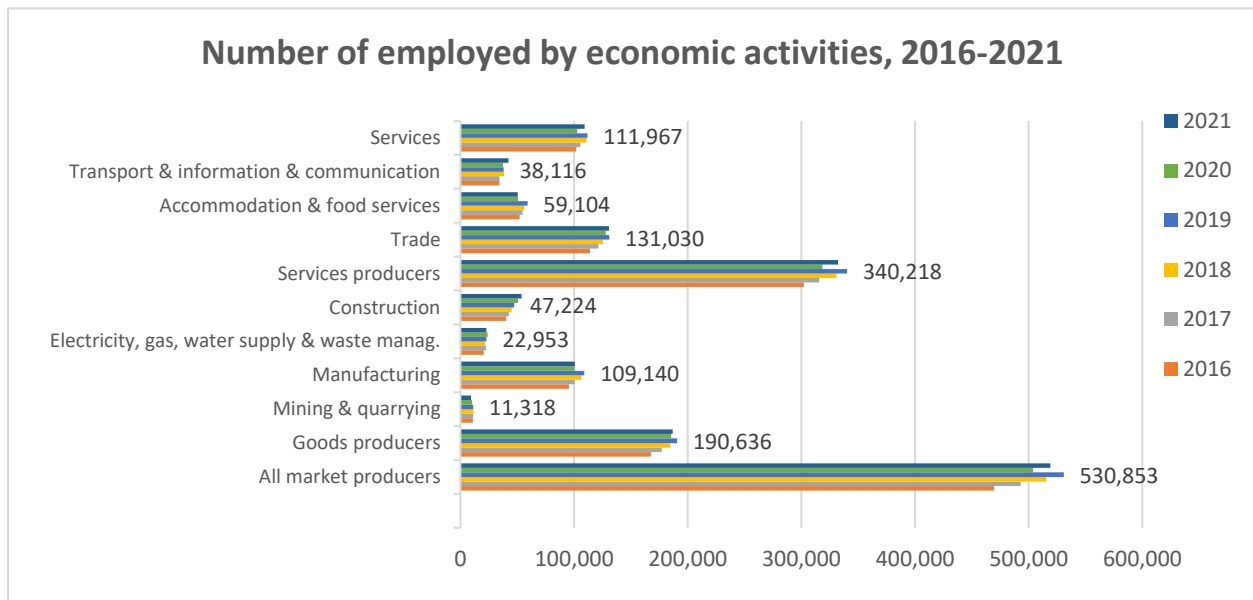

Figure 1: Number of employed by economic activities, 2016-2021
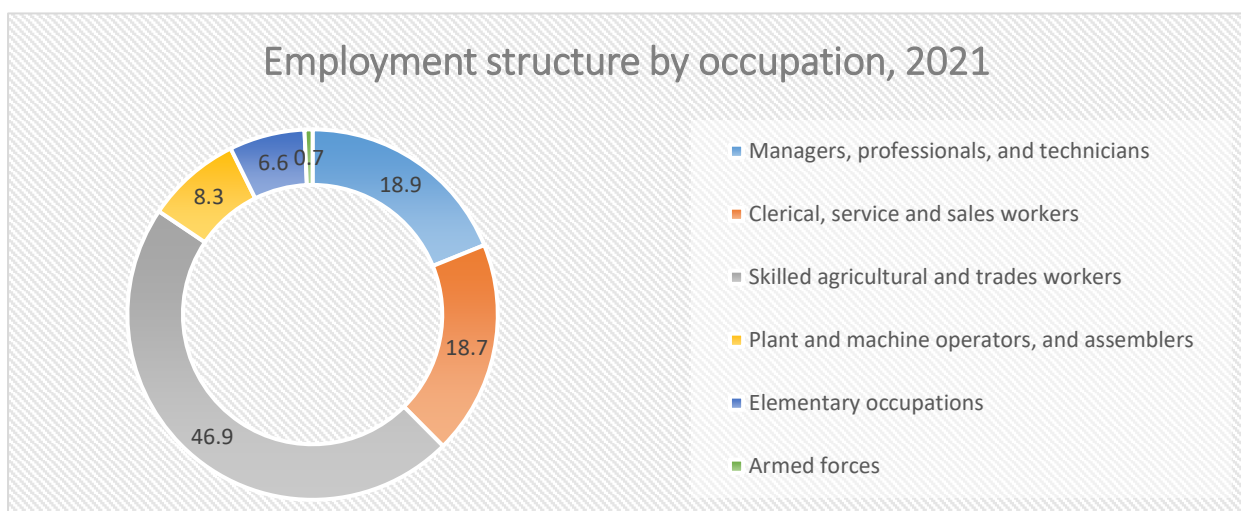*(Source: Structural Business Survey)*

Figure 2: Employment structure by occupation, 2021
(Sources: INSTAT)

Based on occupation the employment structure for 2021 showed that 46.9% are skilled agricultural and trade workers followed by service and sales workers. Regarding the benefits managers, legislators, senior civil workers of the state administration, and executive directors will have the highest pay in 2021, followed by higher education specialists (professionals), and implementation technicians and specialists. While competent agricultural, forestry, and fisheries people, elementary profession workers, craftsmen, artisans, and associated occupations earn less than the national average.

Tirana has the most employment in the service sector (68.7%), Durres has the most employees in the industrial sector (39.4%), and Kuksi has the most employees in the agriculture sector (69.6%) in 2021. In 2021, the average gross pay for a paid worker in Albania was ALL 57.191. The average gross monthly wage for an employee in Albania rose by 6.6% between 2010 and 2020. The average gross monthly revenue for economic operations such as finance and insurance, information and communication, public administration and defense, social insurance, education, health, and social work activities is higher than the national average. While agriculture, forestry, and fishing make less than the national average, wholesale and retail commerce, car and motorcycle maintenance, transportation and storage, housing and food service industries, and agriculture, forestry, and fishing earn more. The wage gap between men and women is 4.5%.

3.2. Analysis of employment indicators and education
Overall labor force participation rate in 2021 was 69.03%, and there has been an increase of 2.3 percentage points in Albania's labor force participation rate for all demographic groups between the ages of 15 and 64. One of the key reasons for unemployment in Albania is the high level of informality in the economy, as is a lack of interest in vocational schools, as well as the negative influence of technological innovation on a scarcity of qualified personnel (with professional job experience). As a result of population decline and immigration, there is a severe and growing labor shortage. Low pay, a mismatch between skills and market demands, relocating to the capital, and transferring overseas are all contributing to a significant labor shortage in areas such as hospitality.

School / academic year	2018-19	2019-20	2020-21	2021-22	2022-23
Fields of Study					
Education	10,062	9,062	8,367	8,085	7,317
Arts and humanities	14,348	12,537	10,972	9,536	7,926
Social sciences, journalism, and information	14,086	11,397	10,277	9,204	9,222
Business, administration, and law	33,447	32,732	31,173	32,227	30,713
Natural sciences, mathematics, and statistics	7,060	5,962	4,924	4,553	4,056
Information and communication technologies	10,016	8,883	8,341	8,458	9,297
Engineering, manufacturing, and construction	20,019	20,775	20,537	22,555	22,834
Agriculture, forestry, fisheries, and veterinary	4,999	4,158	3,458	2,770	3,108
Health and welfare	20,727	20,199	21,195	22,130	22,433
Services	4,279	4,559	4,553	4,362	4,446
Unknown field	0	0	0	0	0
Total	**139,043**	**130,264**	**123,797**	**123,880**	**121,352**

Table 2: Students enrolled in tertiary education by fields of study
(Source: Administrative data from Ministry of Education and Sport, INSTAT 2023)

Table 2 gives us an overview of the education enrolled in tertiary education by the field. We can see that there is a decreasing trend of the enrolled due to multiple factors mostly emigration. The field that has more students enrolled is Business, administration, and law followed by Engineering, manufacturing, and construction. Until the early 2000s, Albania's fason and

manufacturing industries expanded fast. After the 2000s, the move to the service industry occurred, with an emphasis on call-center services. We are currently witnessing a transition away from call centers and toward data centers and digital enterprises. By focusing on concerns outside of the corporate, workplace, and business environment, the Covid-19 epidemic had a significant influence on the labor paradigm. Among the industries in which digital nomads work, the creative industry ranks highest (18%), followed by marketing, startups, social networks, software engineers, internet platforms, web designers, and so on. Albania is marketing itself as a more familiar environment for digital professionals, with highly ideal meteorological conditions, a suitable geographical location, a relatively low cost of living in comparison to other European nations, and a good Internet connection, among other things, in the aftermath of the epidemic. Because this is the philosophical and moral approach to technological development - a world without borders - the presence of digital nomads has resulted in social-cultural communication exchanges in the function of diversity and the protection of human and democratic values, in addition to numerous economic benefits. Despite the tough circumstances surrounding the COVID-19 epidemic, the Albanian government is taking steps to make the country more inviting, such as developing an incentive legislation package for this target population. Significant initiatives to enhance Albania's economic climate were implemented. To better meet the demands of users, progress has been made in building and simplifying digital government services. Albania also leads the way in the number of business registration and licensing procedures and costs, which are both available online and controlled by the National Business Centre. Albania is a generally open economy for investment, according to the OECD FDI Regulatory Restrictiveness Index. Its score in 2020 remained stable at 0.057, lower than the OECD average of 0.063, suggesting that the economy faces minimal trade obstacles and constraints (OECD, 2020). Despite the difficult circumstances surrounding the COVID-19 pandemic, Albania adopted significant economic measures. To better meet the needs of users, progress has been made in building and simplifying digital government services. Albania's Digital Agenda (2015-2022) is a government-adopted strategic framework that aims to promote e-commerce and business process digitization among SMEs, as well as to introduce widely available broadband infrastructure that will allow businesses to access a variety of online services, including e-commerce. However, the potential of the Albanian business environment is constrained by many structural flaws, including a lack of know-how, a poor financial fig, and a high degree of informality, all of which impede access to private-sector finance (European Commission, 2021). Corruption remained a barrier for businesses in the region, with data indicating that more than 36% of organizations received at least one bribe payment request in 2020, much surpassing the 8.7% average for Europe and Central Asia (OECD, 2021). Other prominent barriers for firms include high tax rates and a lack of access to electricity, indicating the need for systemic fiscal and energy infrastructure changes. Furthermore, poor educational quality as a result of insufficient and poorly focused education investment contributes to the economy's inability to update and diversify. Similarly, continuing education for corporate employees is limited, while low-skilled employment continues to dominate the Albanian labor market. The Albanian Qualifications Framework Act specifies the requirements for qualification and job categorization. The preceding is done through the knowledge, abilities, and competencies expected of students and trainees after completing the relevant courses. The law was written by the European Qualification Framework. The framework will be altered as a result of quick technological improvement.

3.3. Digitalization in Albania

In comparison to developed nations, Albania's digitization growth has been generally outstanding, and it has attained comparable levels of innovation in several areas, such as banking.

According to INSTAT statistics, 99% of businesses with more than 10 workers will use computers in 2022, a 3.4% increase from 2016, and 100% of businesses with more than 250 employees will use computers. Computers are now used by 31.3% of employees, up from 28% in 2016.
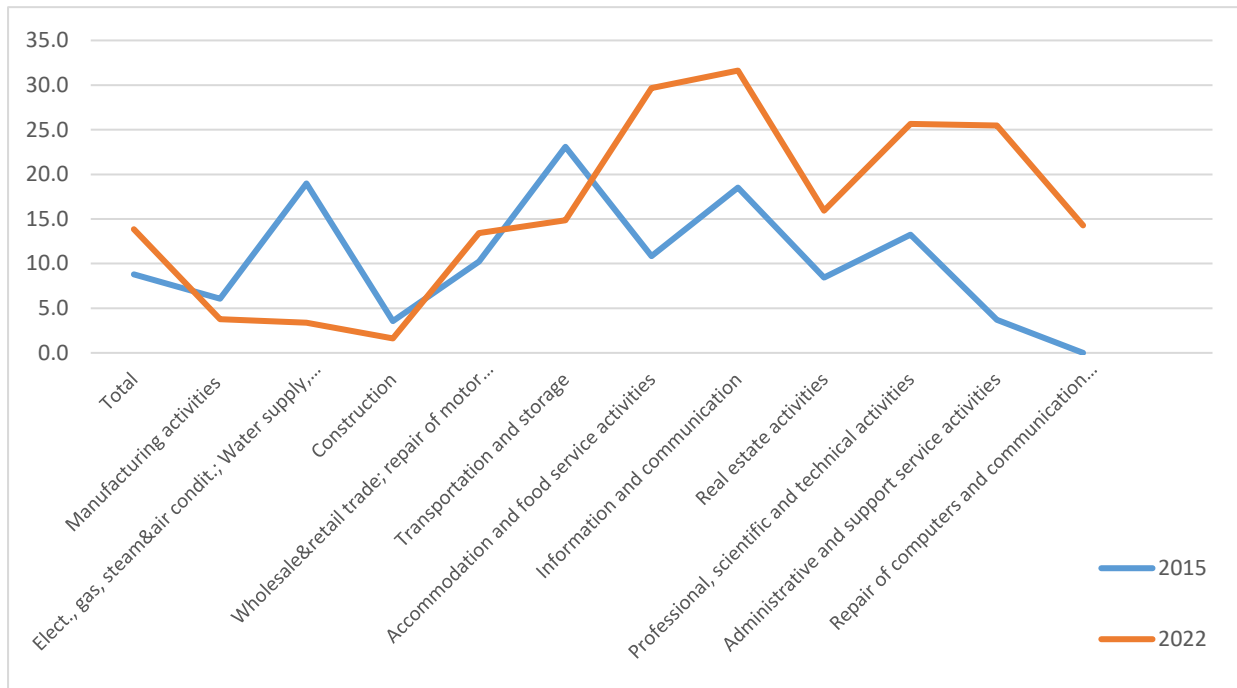

Figure 3: Enterprises that did e-commerce sales (10+)
(Source: INSTAT 2022)

The majority of employees (78.9%) use computers for information and communication, followed by professional, scientific, and technical activities (67.9%) and administrative and support services (60.9%). 98.7% of companies have access to the Internet. 53.3 percent of firms used their website. In 2022, 13.8% of firms sold items or services using their website, specific apps, e-commerce websites, and applications utilized by many enterprises for product trade. Information and communication companies account for 31.6% of all e-commerce, followed by lodging and service activities (food) at 29.7% and professional, scientific, and technical activities at 25.6%.

Albanian sectors affected by digitalization include:
1) *Digitalization of government services.* The E-Albania portal has functioned as a single point of contact for government services since its creation. In contrast to other nations in the area, Albania has an acceptable level of public service digitalization (Kotori 2018). Citizens' perceptions of electronic connection with government institutions have shifted after the 2014 digital revolution in services and public administration. Over 1,200 governmental services are now available online, accounting for approximately 95% of all public services, an increase from 14 such services in 2014, which accounted for 1% of all online services at the time.
2) *Digitalization of financial services.* Through the development of self-service platforms allowing customers to access different digitized goods and service offerings, as well as the overall digitization of banking services, there is an increasing degree of financial services, notably fintech, and e-banking.

3) *Digitalization of e-commerce sales* Figure 3 displays the industries with a high reliance on e-commerce sales.
4) *Digitalization of the hospitality industry.* The business has been digitalized over the last decade, mostly through e-marketing, selling, and booking services via multiple online platforms, increasing the sector's flexibility and competitiveness.
5) *Fiscalization law.* Fiscalization is the process of establishing an electronic invoice through the digitization and modernization of invoicing for cash or bank settlement transactions. Some of the advantages will include a decrease in the informal economy and tax evasion, an increase in income, and the equality of subjects before the law and in the face of competition. All EU member states must participate in the fiscalization process.
6) *Digital education and digital skills:* Various government reforms and plans seek to include training facilities and coding classes into the curriculum as early as the first grade of basic education, as well as to build smart laboratories in all pre-university education.

4. ANALYSIS AND METHODOLOGY

In this chapter, we will conduct a practical examination of the influence of technology and the economic digitalization process on employment levels in Albania. First, we will learn about the data sources and types, as well as the factors that will be evaluated. We will explore the chosen econometric model, its specifications, and the rationale for the choice in this section of the research to obtain correct findings and fair interpretations of the data. Basic Hypothesis: "The implementation of IR 4.0 technological developments in the economy has not affected the increase in the level of employment in Albania". Alternative hypothesis: "The economic implementation of IR 4.0 technological developments has influenced the increase in employment in Albania."

4.1. Source of data and time frame of research

The data utilized in the study are yearly secondary statistics provided by INSTAT, including both unemployment rates over time and levels of technology use in our country's industries. The research period spans seven years, from 2015 to 2021. To present a recent study, this time frame was chosen for data collection. It would be preferable if longer-term statistics could be provided, however, no data on the levels of technology use in our country's industries are accessible before 2015.

4.1.1.Variables

Two variables were chosen for our model:
* The independent variable: Technology (X1)
* The dependent variable is: Rate of unemployment (Y)

4.2. The econometric model

A basic linear regression model will be used to examine the obtained data. The regression model is an economic model that seeks to determine the connection between a dependent variable and one or more independent variables. These models vary in difficulty and nature. Because the data spans time, we will utilize a panel data model. The model that will be used in this paper is as follows: Employment = f (technology). Symbolically, the preceding equation may be translated and represented as follows:

$$Employment = \beta_0 + \beta_1 Technology + \varepsilon \qquad Eq.\ 1$$

Where: Employment: dependent variable (y)
- Technology: independent variable (x1)
- ε = the components of the random error, which indicate the discrepancies that occur between the data from the theoretical model and those that occur in the economy, in other words, the stochastic term that reveals the impact of other factors.
- β_0, β_1 =parameters of the regression model to be calculated, so that β_0 is the estimated value of the change in employment levels that is not caused by the use of technology (that is, if it was not used at all) while β_1 is the average change in levels of employment for the change of one unit in the levels of technology use (this change expressed as a percentage) during the period under review.

The equation indicates that the influence of technology on employment levels should be positive, i.e. $\beta_1 > 0$. Thus, a boost in the use of technology in the economy is predicted to stimulate the development of new jobs (particularly in the IT industry), adding to our country's overall increase in employment. As a result, this study implies a positive link between technology and employment levels.

4.2.1. Data analysis
The model used in the study was created considering all the assumptions of the classic regression model and before implementing the model we made sure that these assumptions were fulfilled by performing tests for each of them.

Year	2015	2016	2017	2018	2019	2020	2021
Employment (%)	52.9	55.9	57.4	59.5	61.2	60.0	60.9
Technology (%)	95	95.6	96	97.3	97.5	98.3	98.5

Table 3: Data analysis
(Source: INSTAT 2023)

4.3. Linearity in parameters
The first assumption of the classical regression model is linearity in the parameters and an easy but very reliable way to check the linearity is thanks to the graphical presentation of the relationship between the variables of the model.
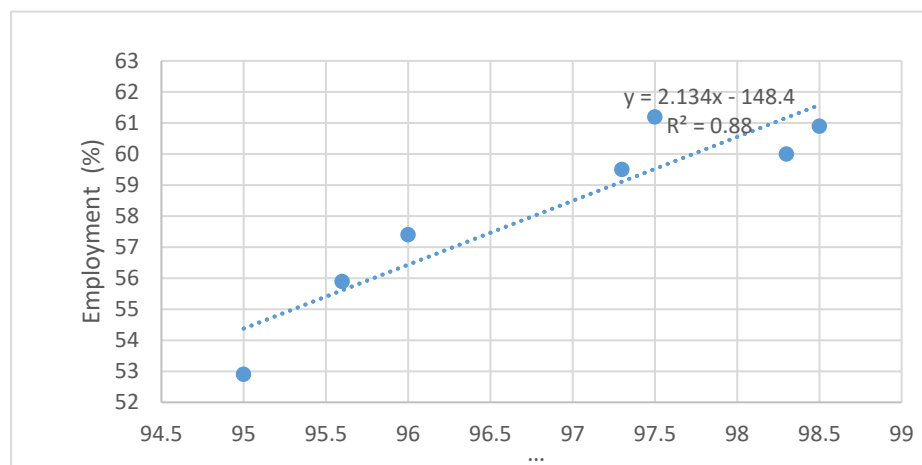

Figure 4: Data analysis
(Source: Data elaborated by authors)

A linear relationship between variables

Employment = 2.134 *Technology - 148.4

The graphic representation generated by the data processing confirms the linearity in the parameters, moreover, it provides us with a mathematical model of this relationship.

4.4. The normality test

The Jarque Bera test is one of the most often used to determine normality. In this study, the JB test for normality was also utilized to test the null hypothesis of the assumption of normal error distribution. If the residuals are normally distributed, the histogram should be bell-shaped, and the Bera-Jarque statistic should be insignificant. This indicates that the p-value must be larger than 0.05 to not reject the fundamental hypothesis of normality at the 5% level.

The hypotheses for the test are:
- H_0: The residuals have a normal distribution
- H_1: The residuals do not have a normal distribution
- Criteria for making the decision:
- If $p > \alpha$, the basic hypothesis cannot be rejected
- If $p \leq \alpha$, the basic hypothesis is rejected (for $\alpha = 0.05$)
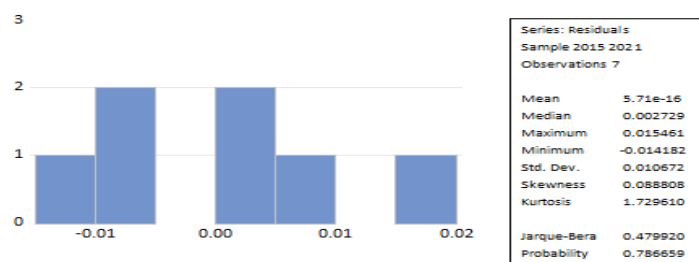

Table 4: Data analysis
(Source: Data elaborated by authors)

Looking at the results generated by the EViews12 program, we see that the probability is 0.786659, so we do not reject the basic hypothesis (0.786659>0.05). The residuals in this model have a normal distribution.

4.5. Stationarity

Another important test for our model is that of stationarity. This test shows the stability of the data for each variable under consideration. To identify the stationarity of the time series, we used the Augmented Dickey-Fuller test presented below:

Hypotheses:
- H_0: Time series has unit root (non-stationary)
- H_1: The time series is stationary

Decision criterion:
- If $p > \alpha$, the basic hypothesis cannot be rejected
- If $p \leq \alpha$, the basic hypothesis is rejected (for $\alpha = 0.05$)

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4.5.1. Stationarity test for employment time series
- H_0: Employment series has unit root (non-stationary)
- H_1: The Employment series is stationary

Augmented Dickey-Fuller Unit Root Test on D(PUNESIMI,2)		
Null Hypothesis: D(PUNESIMI,2) has a unit root		
Exogenous: None		
Lag Length: 0 (Automatic - based on SIC, maxlag=1)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.584457	0.0241
Test critical values: 1% level	-3.271402	
5% level	-2.082319	
10% level	-1.599804	

Table 5: Data analysis
(Source: Data elaborated by authors)

Based on the results generated by the EViews12 program where p=0.0241<0.05 we reject the basic hypothesis and accept the alternative one, that is, the Employment time series is stationary in level.

4.5.2. Stationarity test for technology time series
- H_0: Technology series has unit root (non-stationary)
- H_1: Series Technology is stationary

Decision criteria:
- If p >α, the basic hypothesis cannot be rejected
- If p ≤ α, the basic hypothesis is rejected (for α=0.05)

Null Hypothesis: D(TEKNOLOGJIA,2) has a unit root		
Exogenous: None		
Lag Length: 0 (Automatic - based on SIC, maxlag=1)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.894935	0.0009

Table 6: Data analysis
(Source: Data elaborated by authors)

In the specific case p=0.0009<0.05, this means that the basic hypothesis is rejected and the alternative hypothesis is accepted. So the Technology time series is stationary in level.

4.6. Autocorrelation test
Before interpreting the model we test for autocorrelation or serial correlation. If there is a correlation between the error terms of different series, then the problem of serial correlation or called autocorrelation appears. In our model to detect whether there is serial correlation or autocorrelation between the residuals, we use the Breusch–Godfrey test for higher-order serial correlation.

Hypotheses:
- H_0: There is no correlation between the error terms of higher orders
- H_1: There is a correlation between the error terms of higher orders

Decision criterion
- If $p>\alpha$, the basic hypothesis cannot be rejected
- If $p \leq \alpha$, the basic hypothesis is rejected (for $\alpha=0.05$)

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.231048	Prob. F(2,3)	0.8066
Obs*R-squared	0.934310	Prob. Chi-Square(2)	0.6268

Table 7: Data analysis
(Source: Data elaborated by authors)

Since the value presented by the data processing results: p= 0.6268 > 0.05, the basic hypothesis holds, so there is no correlation between the error terms of higher orders.

4.7. Interpretation of results

After we have proven the validity of the assumptions of the classic regression model, we can continue the work to evaluate in the specific case how much our model manages to explain the variation of the dependent variable. Thanks to data processing in the EViews 12 program using the Method of Least Squares we provided the following indicators.

Dependent Variable: PUNESIM
Method: Least Squares
Date: 06/06/22   Time: 14:19
Sample: 2015 2021
Included observations: 7

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TEKNOLOGJI	2.134290	0.350121	6.095859	0.0017
C	-1.484394	0.339246	-4.375563	0.0072

R-squared	0.881403	Mean dependent var	0.583429
Adjusted R-squared	0.857683	S.D. dependent var	0.030988
S.E. of regression	0.011690	Akaike info criterion	-5.825147
Sum squared resid	0.000683	Schwarz criterion	-5.840601
Log likelihood	22.38801	Hannan-Quinn criter.	-6.016158
F-statistic	37.15950	Durbin-Watson stat	1.579104
Prob(F-statistic)	0.001720		

Table 8: Data analysis
(Source: Data elaborated by authors)

To evaluate how much the model manages to explain the variation of the dependent variable, the criterion R^2 or coefficient of determination is used. The closer this indicator is to 1, the more valid the model used is. In our case, as it appears from the results, the coefficient of determination, which shows the goodness of the approach, is 0.88. So we can say that the variable selected to explain employment levels explains it to a good extent, in other words about 88% of the phenomenon is explained by the factor taken into analysis. In the case that the model had more than one independent variable, we would refer to the modified R^2 value.

Fisher's criterion is used to assess the significance of the model. If it is greater than 5, then we say that the model is statistically significant.

Basic hypothesis H_0:
- "The implementation of IR4.0 technological developments in the economy has not affected the increase in the level of employment in Albania"
- Alternative hypothesis H_1:
- "The implementation of IR4.0 technological developments in the economy has influenced the increase in the level of employment in Albania"

Decision criteria:
- If $p<0.05$ reject H_0 and accept H_1,
- If $p>0.05$ H_0 cannot be rejected.

In our case, $p = 0.00172$, which is less than 0.05, leads us to reject the main hypothesis and adopt the alternative hypothesis: "The implementation of IR4.0 technological developments in the economy has influenced the increase in employment in Albania." The total model is statistically significant since the F-statistic value is 37.1595 and the F-statistic probability is 0.00172. This is sufficient to conclude that the variables have a substantial connection. The variable "Technology" has a plus (+) symbol, indicating a positive link with employment. Assuming all other factors remain constant, a one-unit rise in the variable "Technology" results in a 2.1-unit increase in the dependent variable "Employment". As a result, we infer that the application of fourth industrial revolution technologies boosts employment.

5. CONCLUSIONS

Infrastructure investments in research, the circular economy, telecommunications, electricity, and transportation must be increased quickly. These will allow for the creation of a new range of goods and services in many domains, including green and digital products, digital services linked to telemedicine, smart mobility, electric automobiles, and sustainable transportation. However, the growth of automation enabled by future technologies like robots and artificial intelligence should be considered an opportunity rather than a danger. As a result, we infer that the application of fourth industrial revolution technologies boosts employment. Some major conclusions are as follows:

1) The use of fourth-generation technology increases employment.
2) Albania is making good strides in digitization.
3) Digitization opens up a plethora of prospects, particularly for a developing economy like Albania, with its potential for creative businesses and ambitious young people ready to advance their skills and certifications.
4) There are some concerns about the influence of digitization on the labor market, particularly for the elderly. The replacement of certain old occupations with new professions is one of the consequences of digitalization. Among the newly developed jobs are cyber security professionals, web and app developers, expert data scientists and machine learning, cross-media communication specialists, and digital marketing specialists. These jobs need high technical abilities as well as continuing training.
5) The digitalization of productive sectors and the employment of artificial intelligence in the workplace may increase not just output (and hence economic development), but also job efficiency and safety.

Some major recommendations are as follows:

1) Invest in digital infrastructure to increase exports and attract export-oriented foreign direct investment. It is critical to develop and establish online platforms to assist Albanian businesses with their online operations and information searches to increase exports and competitiveness.

2) The educational instruction provided by academic institutions will need to be focused even more on the competencies and skills knowledge necessary for a digital economy.

3) Academic institutions and companies must collaborate to better understand young work attitudes and how they might be handled. To attract and retain young talent in Albania and so prevent the widespread problem of brain migration, it is critical to address young people's ambitions and driving factors.

LITERATURE:

1. Acemoglu, D., Restrepo, P. (2018). Artificial Intelligence, Automation, and Work. In Agrawal A.K., Gans J. and Goldfarb A. (Eds.), *The Economics of Artificial Intelligence*, University of Chicago Press, Chicago.

2. Byrne, D., Corrado, C. (2017). ICT Services and Their Prices: What Do They Tell Us About Productivity and Technology? *International Productivity Monitor*, 33, 150–181. DOI: 10.17016/FEDS.2017.015r1

3. Ciffolilli, A., Muscio, A. (2018). Industry 4.0: national and regional comparative advantages in key enabling technologies, *European Planning Studies*, 26:12, 2323-2343, DOI: 10.1080/09654313.2018.1529145

4. Dingley, M. (2018). Lean Manufacturing + Industry 4.0: The Next Level of Operational Excellence? *The Matthews Blog*. https://blog.matthews.com.au/lean-manufacturingindustry-4-0-the- next-level-of-operational-excellence/

5. Habili, M., Muharremi, O., Hoxhaj, M. (2022). Analysis of the Variables Influencing People's Propensity to Use Online Banking Services in Albania. *International Journal of Finance & Banking Studies (2147-4486), 11*(4), 58-65. https://doi.org/10.20525/ ijfbs.v11i4.2266

6. Kotorri, A. (2018). Digjitalizimi i Ekonomisë dhe Ndikimi i tij në Tregun e Punës: Sfidat për Shqipërinë. Friedrich Erbert Stiftung, 2018. https://library.fes.de/pdf-files/bueros/albanien/14504.pdf. Accessed May 3, 2023.

7. Kraja, P. (2023). Report on Smart Education in Albania. In *Smart Education in China and Central & Eastern European Countries* (pp. 51-79). Singapore: Springer Nature Singapore. DOI: 10.1007/978-981-19-7319-2_3

8. Markus, L. Rüßmann, M., Rainer Strack, R., Lueth, K.L., Bolle, M. (2015). Man and machine in industry 4.0: How will technology transform the industrial workforce through 2025. *The Boston Consulting Group* 2 (2015).

9. Ngai, L. R., Petrongolo. B. (2017). Gender Gaps and the Rise of the Service Economy. *American Economic Journal: Macroeconomics*, 9 (4): 1-44**.**DOI: 10.1257/ mac.20150253

10. Pelari, O. M., Hoxhaj, M. (2022). An Empirical Investigation of the Influence of the Pandemic on Albanian Internet Banking Service Usage. In *Artificial Intelligence for Sustainable Finance and Sustainable Technology: Proceedings of ICGER 2021 1* (pp. 139-148). Springer International Publishing.

11. Rajnai. Z. Kocsis, I. (2017). Labor market risks of Industry 4.0, digitization, robots, and AI. *2017 IEEE 15th International Symposium on Intelligent Systems and Informatics (SISY)*, Subotica, Serbia, 2017, pp. 000343-000346, doi: 10.1109/SISY.2017.8080580.

12. Susskind, D. (2017). *A Model of Technological Unemployment*. Economics Series Working Papers 819, University of Oxford, Department of Economics, Oxford.

13. Tataj, X., Kola, M. K. (2021). Education Policies in Line with the Latest Developments in the Field of Artificial Intelligence: Case of Albania. *İnsan ve İnsan*, *8*(27), 101-116. https://doi.org/10.29224/insanveinsan.818263
14. https://data.oecd.org/fdi/fdi-restrictiveness.htm
15. https://data.worldbank.org/

THE INFLUENCE OF THE APPLICATION OF MICROBIAL BIOAGENTS ON THE REDUCTION OF MINERAL FERTILIZERS COSTS

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ABSTRACT
Soil fertility plays a crucial role in agricultural production, and maintaining soil fertility is essential for efficient and economically secure agriculture. In soils with insufficient fertility, integrating microbiological agents with conventional agronomy practices offers a promising approach to improve fertility and enhance plant growth. Microorganisms such as beneficial bacteria and fungi can enhance plant growth, seed germination, seedling emergence, stress tolerance, disease resistance, and root growth. The shift towards sustainable agriculture involves reducing mineral fertilizer use and incorporating organic fertilizers and microbial bioagents. The aim of this study was to investigate the economic feasibility of using microbial bioagents in optimal or reduced fertilization for maize, wheat, and Italian ryegrass.

Field experiments were conducted to evaluate the effects of microbial bioagents and fertilization on crop yields. The experimental treatments included higher, optimal fertilization (HF) and lower, reduced fertilization (LF), both with and without the addition of microbial bioagents. The results indicated that microbial bioagents increased yields for maize, wheat, and Italian ryegrass compared to the control groups. The achieved results demonstrate the successful utilization of microbial bioagents as a partial substitute for mineral nitrogen fertilizers with savings of mineral fertilizers in amounts of 32-48 kg/ha N in the cultivation of ryegrass, 57-74 in the cultivation of corn and 101-124 kg/ha N in the cultivation of wheat. These three production seasons are a sure proof of the effective replacement of a significant amount of mineral fertilizer with microbial bioagents without reducing the yield and with yearly savings of 21-241 EUR/ha. These findings emphasize the potential of microbial bioagents as a partial substitute for mineral fertilizers in sustainable agriculture, and it is possible to achieve even higher yields.
Keywords: *reduced fertilization, nitrogen, soil fertility, profitability, microbial bioagents*

1. INTRODUCTION

Soil fertility is extremely significant for successful and profitable agricultural production. In fertile soils, fertilization and other agrotechnical measures are aimed at maintaining fertility and degradation of fertility is unacceptable. In soils characterized by insufficient fertility, a promising approach for achieving successful and economically viable agriculture is the simultaneous integration of conventional agronomy practices with the utilization of microbiological agents. These microbiological agents, including beneficial bacteria, fungi, and other microorganisms, offer the potential to enhance soil fertility and stimulate plant growth through a variety of mechanisms. Bacterial inoculants are able to increase plant growth, speed up seed germination, improve seedling emergence, responses to external stress factors, protect plants from disease and root growth pattern (Egamberdiyeva, 2007). For decades, the intensive cultivation of field crops meant the use of mineral fertilizers in order to achieve the target yield and preserve soil fertility. However, the development of agriculture in the direction of sustainable management includes the reduction of the mineral fertilizer application by more intensive use of organic fertilizers and microbial bioagents. The development of sustainable agriculture and digital technologies enables not only the precise application of fertilizers, but also the precise modeling and calculation of the optimal fertilization and the profitability of fertilization including mineral and/or organic fertilizer (Lončarić et al., 2023). Over years of soil exploitation without optimal fertilization, soil degradation and reduced fertility occur. One of the key aspects of maintaining soil fertility is organic matter, also known as humus (Lončarić et al, 2023). Maintaining an adequate level of humus in agricultural soils is of utmost importance. However, agricultural practices in Croatia over the past few decades have predominantly focused on appropriate mineral fertilization while frequently neglecting or completely omitting organic fertilization. As a result, in the last three years, approximately 50% of the analyzed soils have exhibited poor humus (SOM) content (Hefer et al, 2023). Cereal crop yields under organic management in Europe generally range from 60% to 70% of those achieved under conventional management. On the other hand, grassland yields in organic systems typically fall within the range of 70% to 100% compared to conventional management. Despite the lower crop yields, the profits of organic farms in Europe are comparable to those of similar conventional farms (Mader et. al, 2002). In conventional agriculture, achieving stable and high yields requires calculating the fertilization requirements based on soil analysis to ensure economically and ecologically fertilization. Fertilizer prices tend to rise and the reduction of the mineral fertilization without yield decreasing as one of the sustainable agriculture goals could be achieved by using microbial bioagents with simultaneous protection of the environment and soil fertility (Lončarić et. al, 2023a). This suggests that the synergy

between organic and conventional agriculture is necessary, and the addition of microorganisms is essential to achieve high yields without compromising soil health. Building upon our previous research on wheat (Lončarić et. al, 2023b), corn (Lončarić et. al, 2023c), and Italian grass (Lončarić et. al, 2023d), where it was established that the application of microbial agents can complement mineral fertilization, resulting in increased yields and improved soil fertility, the aim of this study was to investigate the economic feasibility of using microbial agents in optimal or reduced fertilization. The research was conducted on corn, wheat, and Italian ryegrass, with the following treatments: higher (optimal) fertilization (HF), lower (reduced) fertilization (RF) with and without the addition of microbial agents.

2. MATERIAL AND METHODS
2.1. Field experiment
Maize (FAO 390) experiment was set up in 2021 on Trnava locality on acid poor soil with a total of 128 experimental plots (A2 × B4 × C4 × 4) and a total experimental area of 6.4 ha. The main treatments of the experiment were reduced (lower) fertilization (LF) and optimal (higher) mineral fertilization (HF) with 4 different microbial bioagents including *Azotobacter*, *Azospirillum*, *Bacillus*, *Pseudomonas*, *Trichoderma*, *Beauveria* and mycorrhiza. All microbial bioagents were applied in 3 different treatments (application in soil, seed treatment, and application in soil with seed treatment) in four replications. All microbial treatments were carried out in one day, i.e. in preparing the soil for sowing and/or directly with sowing. Fertilization of maize included urea and CAN with total amounts of N 113.5 kg/ha (LF) and 159.5 kg/ha (HF), respectively. The harvest of maize from the experimental plots was carried out with a combine harvester and the yield was weighed, plot by plot, with a field scale. This paper presents comparisons of yields from control treatments and average yields of all treatments with microbial bioagents, regardless of the type of applied mixture of microorganisms and the method of application. The field experiment with winter wheat growing was set up in the fall of 2021 after maize on Trnava locality on acid poor soil. In addition to the two levels of fertilization, higher optimal (HF) and lower reduced (LF), the experimental treatments were 4 different microbial bioagents as in maize growing wuth 128 plots on a total experimental area of 6.4 ha. Fertilization of winter wheat included complex fertilizer 15-15-15 and CAN with total amounts of N 84.75 kg/ha (LF) and 169.5 kg/ha (HF), respectively. The harvest of wheat from the experimental plots was carried out with a combine harvester in July and the yield was weighed, plot by plot, with a field scale. The field experiment with Italian ryegrass was set up in the fall of 2021 on Ledenik locality in eastern Croatia. In addition to the two levels of nitrogen fertilization, lower fertilization (LF) with 66 kg/ha N or higher fertilization (HF) with 132 kg/ha N, the experimental treatments were 4 different mixtures of microbial bioagents and 3 different applications, as in experiments with maize or winter wheat. The harvest of Italian ryegrass on the experimental plots was carried out by manual mowing from an area of 1 m^2 on each plot, after which the mass of fresh matter was weighed, the sample was dried and the mass of dry matter was weighed again.

2.2. Calculating of savings in mineral fertilization
The difference in the required amount of N added with mineral fertilizers for a certain yield was determined by a regression model of the achieved yield and the implemented nitrogen fertilization in the cultivation of wheat, corn and Italian ryegrass, with or without the addition of microbial bioagents. The determined amounts of nitrogen as possible savings in achieving the same yield by adding microbial bioagents were multiplied by the market prices of nitrogen (EUR/kg N) in mineral fertilizers in Croatia from the lowest values in 2018 to the highest values in 2022 (Lončarić et al., 2023). Therefore, the amounts of potential savings in fertilizing with mineral forms of N are calculated using the price range of kg N from 0.65 to 1.95 EUR/kg N.

3. RESULTS AND DISCUSSION

3.1. Maize yield

The yield of maize was very low (Figure 1), but 12.5% higher after higher comparing to lower fertilization. On average, the use of microbial agents increased the yield by 0.93 t/ha, which is an increase of 17.5% regardlles to fertilization. There are already studies conducted on cereals, including corn, where improved nutrient uptake in plants was observed during treatment with microorganisms (Egamberdiyeva, 2007).
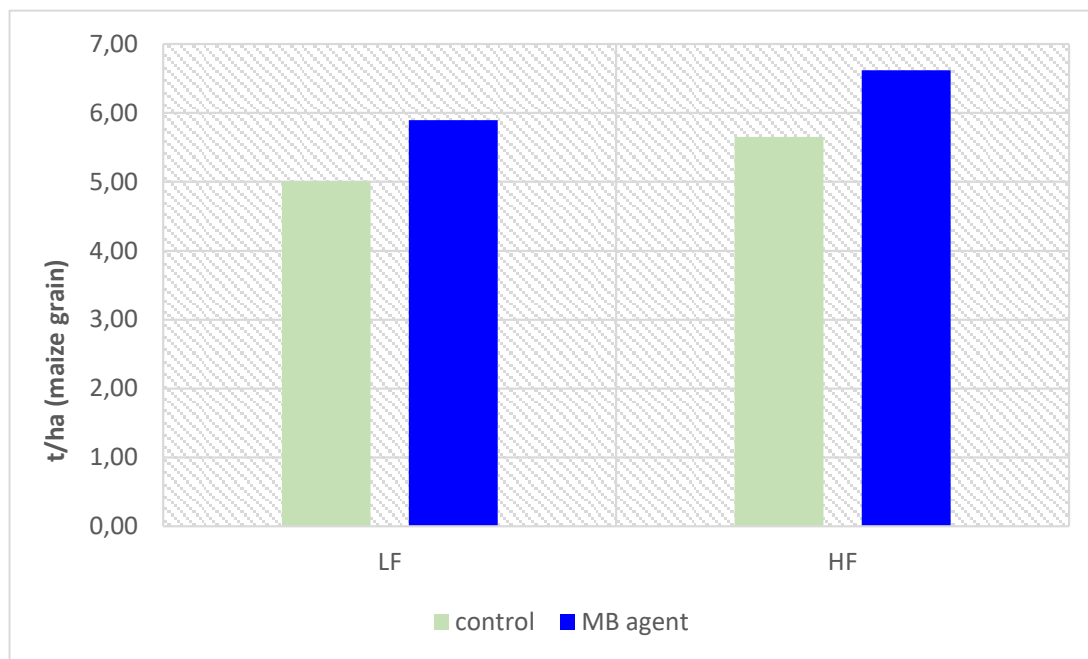

Figure 1: Microbial bioagents impact on maize yield (Legend: LF- lower fertilization; HF-higher fertilization; control – no microbial agent; MB agent - with microbial agent)

A slightly higher increase in the yield of corn grains due to the addition of microbiological preparations was found with lower fertilization (17.8%) than with higher fertilization, but the differences are negligible. It is significant that the mentioned increase with the use of microbial agent was higher than with the increase of mineral nitrogen fertilization. Also, the yield with lower fertilization with the addition of microbial agent (LF with MB) was higher than the yield with increased fertilization without the addition of microbial agent (HF no MB), which means that the treatment with microbial agent resulted in higher increase in yield than additional fertilization with mineral nitrogen.

3.2. Wheat yield

The yield of wheat grain was on average high (8.1 t/ha), where the increase in mineral fertilization resulted in a 29.6% increase in yield compared to reduced fertilization (without microbial bioagent additions in both cases). However, the addition of a microbial bioagent with reduced fertilization resulted in 40.2% increase in yield, which means that the addition of a microbial agent was 36% more effective than an increase in mineral N fertilization (Figure 2). On average, for both fertilization levels, the addition of the microbial bioagent resulted in a 28.6% yield increase. A similar study was conducted on wheat, where it was found that the addition of microbial bioagents enhances the uptake of nutrients such as N, P, and K in plants. The extent of nutrient uptake and microbial activity is dependent on environmental conditions and soil temperature (Egamberdiyeva and Hoflich, 2003).
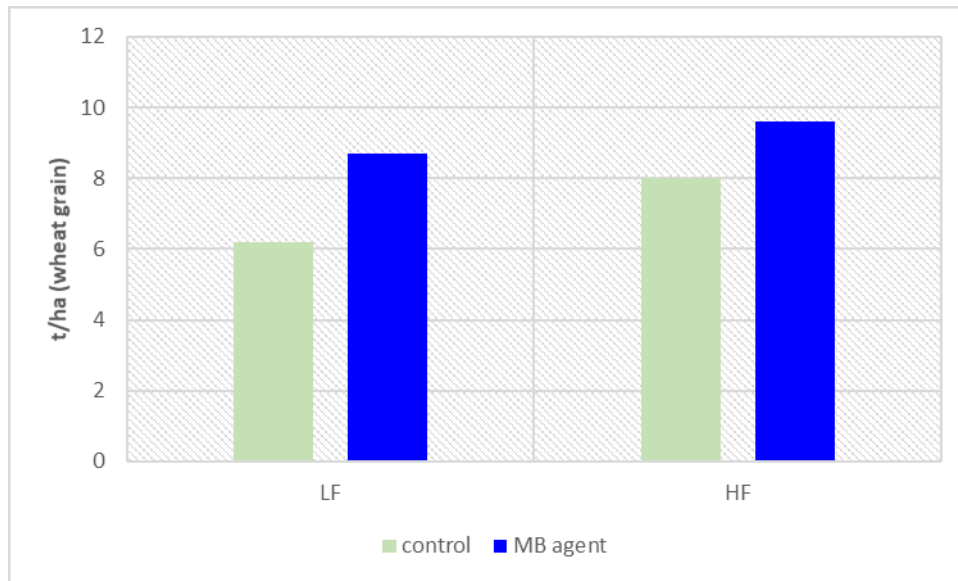
Figure 2: Microbial bioagents impact on wheat yield (Legend: LF- lower fertilization; HF-higher fertilization; control – no microbial agent; MB agent - with microbial agent)

3.3. Italian ryegrass yield

The average yield of Italian ryegrass in the experiment was 2.5 t/ha of dry matter, and the increase in mineral fertilization without the use of microbial agents resulted in a 16.5% increase in yield compared to the yield of reduced fertilization (Figure 3). Under the same conditions of reduced fertilization, but with the addition of microbial agents, the yield increased by 53.7%. Thus, the addition of a microbial agent with reduced fertilization had a 2.26 times greater effect on increasing the yield of Italian ryegrass than additional mineral N fertilization.
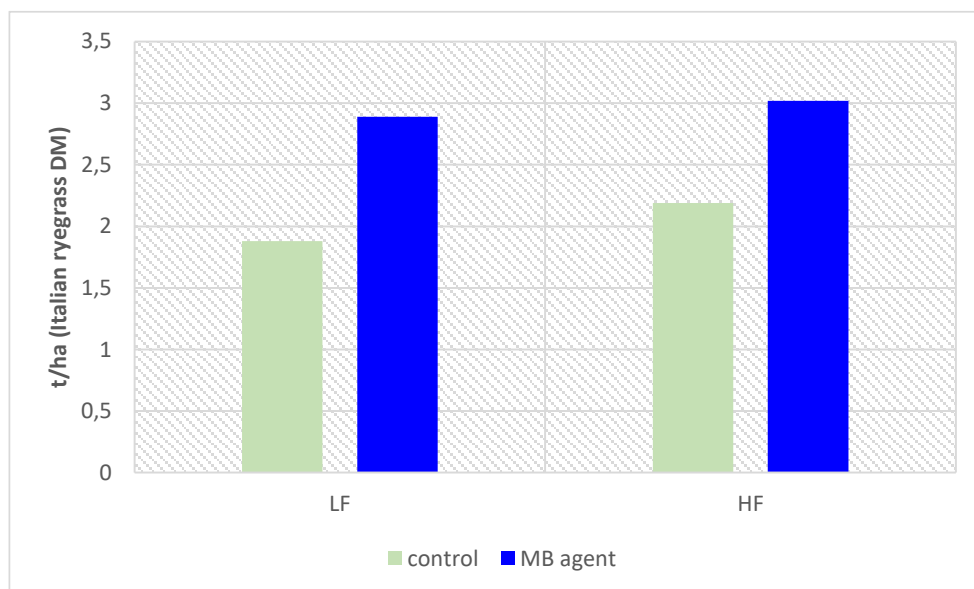

Figure 3: Microbial bioagents impact on Italian ryegrass yield (Legend: LF- lower fertilization; HF- higher fertiliz.; control - no microbial agent; MB agent - with microb. agent)

The application of microbial bioagens of annual ryegrass, a pasture crop, with a mixture of three plant growth-promoting bacteria resulted in a significant increase in plant growth and physiological status.

This led to enhancements in leaf photosynthetic pigments, lipid biosynthesis, and the content of linolenic acid, an omega-3 fatty acid with high dietary value. The evaluation of biomass indicated an inverse relationship between plant dry weight and the size/number of strains in the inoculum (Castanheira et. al, 2017).

3.4. The reduction of costs of fertilization with mineral fertilizers

The lowest fertilization and the lowest yields were in the cultivation of Italian ryegrass. Therefore, by using microbial bioagents, it was possible to replace 31.7 to 47.6 kg/ha of N (usually added as mineral fertilizer) without loss of yield. The value of the specified amounts of N fertilizer, depending on the price per kg of mineral N from 0.65-1.95 EUR, as was the case in Croatia in 2011 -2022 (Lončarić et al., 2023a), ranges from 20.6 to 92.8 EUR/ha (Figure 4).
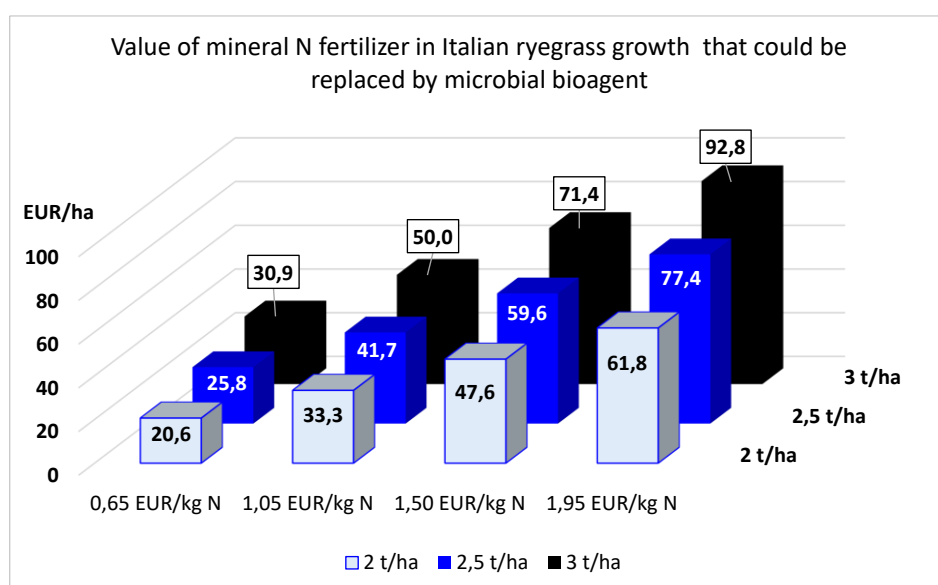

Figure 4: Value (EUR/ha) of mineral N fertilizer that could be replaced by microbial bioagent in Italian ryegrass growth
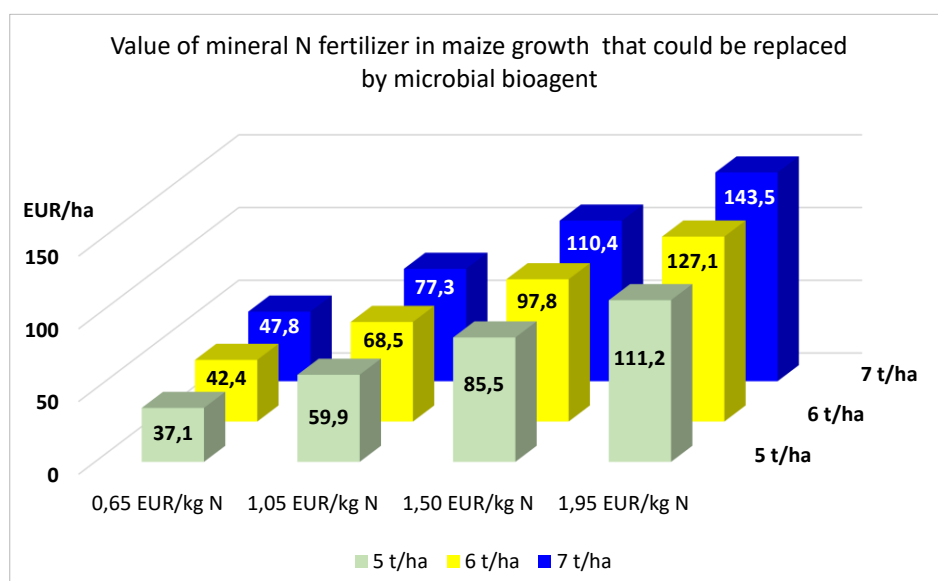

Figure 5: Value (EUR/ha) of mineral N fertilizer that could be replaced by microbial bioagent in maize growth

Fertilization and yield were significantly higher in maize cultivation, and by using microbial bioagents with reducing fertilization it was possible to save 37.05-143.52 EUR/ha (Figure 5). The mentioned amounts refer to savings with a realized yield of 5-7 t/ha of maize and with fertilizer prices of 0.65-1.95 EUR/kg N (Lončarić et al., 2023a). In the cultivation of Italian ryegrass and maize, it is evident that the increase in yield has also increased savings by replacing mineral fertilizers with microbial bioagents. It should be noted that in both cases it is about relatively low levels of yields where additional amounts of available nitrogen (or some other limiting factor) significantly increase yields. The highest yields were achieved in the cultivation of wheat, where the nitrogen amount in reduced fertilization was lower than in maize, and the nitrogen amount in higher fertilization was slightly higher than in maize. Due to the high yield and high fertilization rates, the greatest savings were achieved by replacing mineral fertilizers with microbial bioagents in wheat growing. Therefore, by replacing 101.1 to 123.7 kg/ha of N with microbial bioagents, savings in the range of 65.7 to 241.2 EUR/ha were achieved (Figure 6).
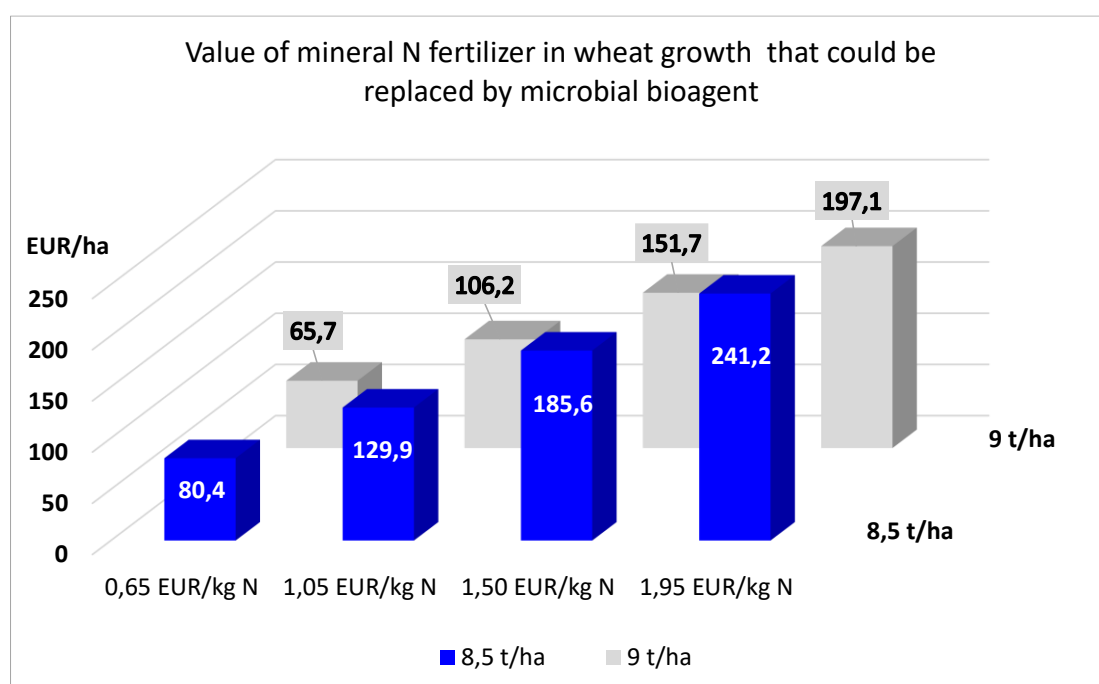

Figure 6: Value (EUR/ha) of mineral N fertilizer that could be replaced by microbial bioagent in winter wheat growth

4. CONCLUSION

In conclusion, the findings suggest that microbial bioagents have the potential to serve as a viable alternative to a significant part of mineral fertilization, both in production with achieved low and high yields. Furthermore, the use of microbial bioagents can enhance wheat yield on nutrient-deficient soils, regardless of whether reduced or optimal mineral fertilization is applied. Notably, the impact on yield improvement seems to be more pronounced after reduced fertilization. Overall, these results demonstrate the successful utilization of microbial bioagents as a partial substitute for mineral nitrogen fertilizers with savings of mineral fertilizers in amounts of 32-48 kg/ha N in the cultivation of ryegrass, 57-74 in the cultivation of corn and 101-124 kg/ha N in the cultivation of wheat. The differences are high, which depends not only on the crop, but also on the production conditions. However, these three production seasons are a sure proof of the effective replacement of a significant amount of mineral fertilizer with microbial bioagents without reducing the yield and with savings of 21-241 EUR/ha.

LITERATURE:

1. Castanheira, N. L., Dourado, A. C., Pais, I., Semedo, J., Scotti-Campos, P., Borges, N., Carvalho, G., Crespo, M. T. B., Fareleira, P. (2017): Colonization and beneficial effects on annual ryegrass by mixed inoculation with plant growth promoting bacteria. Microbiological Research 198: 47-55.
2. Egamberdiyeva, D. (2007): The effect of plant growth promoting bacteria on growth and nutrient uptake of maize in two different soils. Applied Soil Ecology 36: 184-189.
3. Egamberdiyeva, D., Höflich, G. (2003): Influence of growth-promoting bacteria on the growth of wheat in different soils and temperatures. Soil Biology & Biochemistry 35: 973-978.
4. Hefer, H., Andrišić, M., Zegnal, I., Mikulić, D., Rašić, D., Lončarić, Z. (2023): *Agrochemical indicators of soil fertility in the Republic of Croatia in 2021*. 58th Croatian & 18th international symposium on agriculture Book of abstracts, Carović-Stanko, K., Širić, I. (ed.). Zagreb: Sveučilište u Zagrebu Agronomski fakultet, Zagreb, 2023: 17.
5. Lončarić, Z., Jelić Milković, S., Ravnjak, B., Nikolin, I., Perić, K., Nemet, F., Ragályi, P., Szécsy, O., Rékási, M., Lončarić, R. (2023): Modeling the cost-effectiveness of direct replacement of mineral forms of N, P, and K with organic fertilizers. 58th Croatian & 18th international symposium on agriculture Book of abstracts, Carović-Stanko, K., Širić, I. (ed.). Zagreb: Sveučilište u Zagrebu Agronomski fakultet, Zagreb, 2023: 7.
6. Lončarić, Z., Rastija, D., Hefer, H., Andrišić, M., Rašić, D., Zegnal, I., Lončarić, R. (2023a): *Decreasing Content of Soil Organic Matter as Direct Loss of Nitrogen and Money from Soil*. Economic and Social Development. 95th International Scientific Conference on Economic and Social Development. Book of Proceedings, Ribeiro, H. N., Fotova Cikovic, K., Kovač, I. (ed.). Varazdin Development and Entrepreneurship Agency, Varazdin, Croatia, 2023: 259-267.
7. Lončarić, Z., Jović, J., Zebec, V., Ivezić, V., Abadžić, M., Katalenić, M., Prakaturović, V., Rastija, D., Rupčić, J., Nikolin, I., Kristek, S. (2023b): *Impact of microbial bioagents application and mineral fertilization on wheat yield*. 58th Croatian & 18th international symposium on agriculture Book of abstracts, Carović-Stanko, K., Širić, I. (ed.). Zagreb: Sveučilište u Zagrebu Agronomski fakultet, Zagreb, 2023: 28.
8. Lončarić, Z., Kristek, S., Zebec, V., Ivezić, V., Iljkić, D., Abadžić, M., Katalenić, M., Nikolin, I., Jantoš, J., Kerovce, D., Jović, J. (2023c): *Maize yield after microbial bioagents application under different fertilization*. 58th Croatian & 18th international symposium on agriculture Book of abstracts, Carović-Stanko, K., Širić, I. (ed.). Zagreb: Sveučilište u Zagrebu Agronomski fakultet, Zagreb, 2023: 29.
9. Lončarić, Z., Jović, J., Zebec, V., Ivezić, V., Abadžić, M., Katalenić, M., Prakaturović, V., Antunović, Z., Rastija, D., Rupčić, J., Nikolin, I., Kerovce, D., Kristek, S. (2023d): Italian ryegrass' (*Lolium italicum* L.) yield and nutrient content affected by microbial bioagents application. XXVIII međunarodno savjetovanje Krmiva 2023. Zbornik sažetaka. Antunović, Z., Janječić, Z. (ed.). Zagreb: Krmiva d.o.o. Zagreb, 2023: 120-121.
10. Mader, P., Fliebbach, A., Dubois, D., Gunst, L., Fried, P., Niggli, U. (2002): Soil fertility and biodiversity in organic farming. Science 296 (5573): 1694-1697.

CURRICULUM CONTRIBUTIONS TO PRIMARY PREVENTION OF DOMESTIC VIOLENCE: FROM BASIC EDUCATION TO SECONDARY EDUCATION

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ABSTRACT

Violence, such as domestic violence, constitutes dilemmas, contradictions and complexities that characterize the notions of citizenship and human rights in society. It is becoming increasingly difficult to build an inclusive school in a society where inequalities and exclusion persist. It is essential to know how the school can reverse this situation, from primary to secondary education. With regard to prevention, Primary Prevention Programs must focus on education for citizenship in all educational cycles. In this multilevel and intergenerational intervention, knowledge constitutes the possibility for all students to access enabling and empowering knowledge. It is in this sense that the curriculum, based on a disciplinary matrix and the same for all, must be rethought. An inclusive and socializing school must generate possibilities for education for citizenship to be consubstantiated as education for the prevention of violence. In this sense, the possibility of building the curriculum, as proposed by Critical Theory, as a social practice, directed, in this case, to the problem of domestic violence, is of interest. Based on this issue, a research was carried out with the aim of understanding as to what extent the inclusion of the theme of domestic violence in the curriculum pratices contributes to primary prevention of domestic violence. The research was carried out in two Grouping Schools (GE), located in the two largest cities in Portugal: Porto and Lisbon, being that one (Porto) is developing, in its Educational Project, a Prevention Project against Domestic Violence, the other institution (Lisbon) doesn´t has any specific project on this issue. The study assumed a qualitative nature, using the methodological strategy of case studies. In the two GE, 8 teachers that teach in the last year in each of the 4 eductional cycles answered an online questionnary using the Google Forms tool. Based on the results obtained from data analysis, it is recognized that it is not enough for the issue of domestic violence to be on the agenda of educational policies. It is crucial that the school adopts the theme as a priority in the curriculum and in the educational practices developed in the classroom and in whole school, through specific programs for this purpose, which make it possible to impregnate the culture of the school community for the primary prevention of domestic violence.
Keywords: Curriculum, Domestic violence, Primary prevention, Primary and secondary education

1. INTRODUCTION

In the global world, it is becoming increasingly difficult to build an inclusive school in a society where inequalities and exclusion persist. It is essential to know how the school can reverse this situation, from primary to secondary education, taking into account the specificities of each educational community. In order to prevent domestic violence and combat existing inequalities, it is essential to introduce activities and projects, within the scope of citizenship education, working on behaviours and values and ensuring respect for the diversity of cultures of all elements of the community, students, teachers and other elements (Leite & Rodrigues, 2001).

Citizenship education is currently one of the educational priorities in the curricula in force throughout compulsory education. The practical application of the curriculum includes reflection on stereotypes and prevention of domestic violence from the early years of primary school (Santos, 2007). It is interesting to move from theory to practice, through the realisation of projects and activities that meet different cultures and provide students with the awareness of essential values that help to prevent Domestic violence. violent or criminal behaviour can be prevented or remedied by preventing it before it occurs (APAV, 2020). This is one of the great educational challenges of our time, which underpins and justifies the present study. This article is part of a broader research plan, carried out under the FAZER + Programme: support to science and innovation, of the Lusófona Group. The project "Domestic violence: a multidisciplinary reflection beyond crime" is underway, which has a study segment in the area of Education Sciences, encompassing the aspect of primary prevention, with the realisation of case studies in two Grouping Schools (GE), one in Lisbon and the other in Porto. In this sense, the research data presented are partial, since we focus only on the perceptions of teachers about the contributions of the curriculum to the primary prevention of domestic violence, in basic and secondary education.

2. SCHOOL CURRICULUM: A SPACE FOR INCLUSION AND PREVENTION OF DOMESTIC VIOLENCE

The school curriculum is a social and historical construction that stems from the ways in which different actors frame the purposes of education and translate them into curricular decisions (Leite & Fernandes, 2012). The negotiation implicit in this decision-making process is influenced and even validated by representations of inclusive education and the school curriculum (Leite & Fernandes, 2012). Educational systems that follow a national curriculum, based on a disciplinary matrix and equal for all (Kärkkäinen, 2012), argue that this option represents a possibility for all students to have access to 'powerful knowledge' (Young 2007, 2010), that is, knowledge that enables them to understand the world in which they live. At present, it is difficult to build an inclusive school in a society where inequalities and exclusion persist. Therefore, it is important to know how the school can reverse this situation, from primary to secondary education. In this sense, it is important to reflect on the social mission of the school, considering the curriculum as a collective space of commitments, an incentive for participation and reflection, as well as a way to develop an inclusive education. Values would be the structuring axes of a more equitable, more solidary and more democratic society (Morgado, 2013). In this process, teachers take on more responsibility, both for the excellence of the pedagogical act and for the implementation of inclusion (Morgado, 2013). The three major curricular theories that have come to be recognised are an expression of this, and a theoretical curricular perspective that can underpin change and innovation in practice is therefore essential. The approaches of the traditionalists, the conceptual empiricists and the reconcetualists are the basis of the three main curriculum theories systematised by Pacheco (1996), taking into account the categorisation of Kemmis (1988). They configure different conceptions of the concept of curriculum, what it is, what role it plays, who influences it and who decides. Technical theory, practical theory and critical theory stand out. Of the three, we highlight the last one, the critical theory, in which the curriculum is essentially seen as a praxis, which values emancipatory legitimacy, emphasising the role of teachers as curriculum makers (Pacheco, 1996), including the interconnection between school, family and environment, for an education focused on inclusion and values. In this critical theory, Gimeno Sacristán believes that to understand the curriculum as praxis is to understand it as:

- a practice, an expression, of the socialising and cultural function that a given institution has, which regroups around it a series of different subsystems or practices, among which is the pedagogical practice developed in school institutions that we commonly call teaching. It is

a practice in which a dialogue is established, so to speak, between social agents, technical elements, students who react to it, teachers who model it, etc." (Gimeno Sacristán, 2017, pp.15-16).

Among these new commitments, issues related to social and curricular justice (Santomé, 2013) are particularly relevant (Figueiredo, Leite, & Fernandes, 2016). Thus, the possibility of constructing the curriculum, as proposed by Critical Theory, as a social practice, in this study directed to the problem of domestic violence, is of interest. According to the above, we will have to include the curriculum in citizenship. Morgado (2021), in the work "New Generation Curriculum and Citizenship: Contemporary Challenges" refers to the importance of the contribution of citizenship, as a "collective means of promoting equal opportunities and consolidating human rights, (...) as one of the structuring axes of 21st century society". (Morgado, 2021, p. 25). That is, education for citizenship and values, alongside violence prevention programmes, must take 'place' and 'time' in curricular practices.

3. CITIZENSHIP EDUCATION AS A STRATEGY FOR PREVENTING DOMESTIC VIOLENCE

Intervention for the prevention of domestic violence must be based on the rights of victims, whether they are children and/or adults. Intervention for prevention should distinguish between different types of action: pedagogical, clinical, psychological, police and judicial actions. Violence prevention can be classified into three levels: primary, secondary and tertiary (WHO, 2002, 2013). At the level of primary prevention, aimed at the population as a whole, it focuses on the causes of domestic violence, related to stereotypes of social roles between men and women, which normalize violence as acceptable or tolerable. At the level of secondary prevention (also known as early intervention), the aim is to work with individuals who are at a visible risk of suffering or committing domestic violence, or it is associated with immediate interventions after the violence, with a view to preventing the escalation of violence. At the tertiary prevention level (also called response), it is about implementing long-term interventions to mitigate the negative impacts of violence with the aim of preventing the recurrence of violence in the long term (for example; victim support programs and accountability of the aggressor, as well as responses by the justice system).

- "These levels of classification are not rigid nor mutually exclusive. For example, developing a strong criminal justice response or well resourced/integrated response system (tertiary prevention/intervention) can send a strong message to the community that violence is unacceptable and will not be tolerated, potentially influencing social norms that might otherwise condone or support violence (primary prevention). (Walden & Wall, 2014, p. 6).

Among the various types of prevention ativities, the school can hold projects based on primary prevention (CIG, 2020). Although, primary prevention activities can be carried out in a variety of settings and formats. These include classroom and/or whole school, advertisements to the general public in the social media, community actions, as well as legislative and policy reforms. Each intervention can target a specific group or the general population The advantages of school-based programmes are associated with the fact that adolescence is considered the ideal time to influence attitudes and behaviours, but also with the characteristics of this type of programmes, such as: accessibility, costs and wide reach. (Flood et al., 2009). Evaluation has provided the strongest evidence of effectiveness within this setting. Scholl-based education programs work to target potential perpetrators, victims and bystanders, and raise their awareness of ethical behaviour; to develop protective behaviours; and to develop their skills in conducting respectful relationships (Walden & Wall, 2014).

It should then be noted that primary prevention is characterized by activities that aim to prevent situations of violence before they occur. These activities consist of learning attitudes and behaviors of respect for all subjects, that is, they consist of learning to identify attitudes, consequences and ways to prevent violence. It is important that the pedagogical intervention includes activities that imply significant learning, in the sense of deconstructing the patriarchal and sexist culture that still dominates our society and allowing the development of tools for the construction of a more egalitarian and fair culture (Magalhães et al., 2020). Any primary prevention on pedagogical programmes should be collaborative in citizenship education in all cycles of education (CIG, 2020; Magalhães et al., 2020). As Perrenoud (1997) states, we believe that by transforming pedagogical practices, we will end up changing the school, and perhaps even man. As signatory country of the Council of Europe Convention on preventing and combating violence against women and domestic violence, better known as the Istanbul Convention (Council of Europe, 2011), Portugal has committed itself to developing the necessary actions to include in school curricula, at all levels of education, the issue of domestic violence. It reiterates the importance of education in preventing violence. Then, in 2017, the National Strategy for Citizenship Education (ENEC - Direção Geral da Educação, 2017) was approved. In this context, the new curriculum of basic and secondary education includes:

- "the Citizenship and Development component, as a work area present in the different educational and training offers, with a view to the exercise of active citizenship, democratic participation, in intercultural contexts of sharing and collaboration and confrontation of ideas on current issues" (Preamble to Decree-Law no. 55/2018, of 6 July) .

This strategy in the formal curriculum is essential so that, in the future, students will be adults with civic behaviour that favours equality, respect and social justice. Some of the themes to be worked on in the classroom and in cross-cutting projects under the ENEC guidelines are: human rights education; environmental education/sustainable development; gender equality education; intercultural education; development education; defence and security education/peace education; health and sexuality education (ENEC, 2017). In this logic, citizenship is an active, individual and collective process, that calls for reflection and action on society's problems (DGE, 2013). So, a more comprehensive approach is advocated, focusing on children and young people realising that the fight for a non-violent society and culture should be a fight against all forms of violence, including domestic violence.

4. METHODOLOGY

In order to understand to what extent the inclusion of domestic violence issues in curricular practices contributes to the primary prevention of domestic violence, this study adopted a descriptive and exploratory methodology, of a qualitative nature. This allows us to attribute meanings to phenomena and understand the contexts in which they exist (Patton, 2015). It is also descriptive in nature. For the detailed analysis of the data collected, we used the Content Analysis technique. Through this technique, we find answers to the questions and statements formulated a priori, which come from the literature review, as well as to those that arose during the investigative process (Amado, Costa & Crusoé, 2017). The study was carried out in two public School Grouping: one in Porto and the other in Lisbon. The choice of these two educational institutions had to do with the fact that one is developing, in its educational project, a project for the prevention of domestic violence, since 2021 and the other does not have any specific project, fulfilling only what is stipulated in the current legislation. As a data collection tool, we used a questionnaire survey with four open-ended questions, aiming to collect extensive answers from the participants. The application of the questionnaires complied with the ethical principles at the University and at national level.

The questionnaire was provided and completed online, using the Google Forms tool, and taking into account the preservation of the anonymity of its participants, including that of the educational institutions. Data referring to the following subject: i) Pertinence of the guiding principles of the prevention of domestic violence in the curriculum of the Education Strategy for Citizenship; ii) Purposes for the prevention of domestic violence set out in the School's documents; iii) Purposes of preventing domestic violence foreseen in pedagogical practices; iv) Domestic violence prevention activities carried out in the classroom. Data collection was preceded by formal authorisation from the management of the two school groups. However, obtaining this authorisation for data collection did not exempt the request for informed consent from the teachers participating in the study. In total, eight teachers responded, four teachers from each School Grouping, one from each end of cycle, namely: 4th year, 6th year, 9th year and 12th year. The participants will be identified in the text by PL and PP followed by a number. As for the data analysis technique, thematic content analysis was used using ATLAS.ti 22.0.1 software.

5. ANALYSIS AND DISCUSSION OF RESULTS

In terms of the selection of participants in both clusters, we can say that they are all women aged between 30 and 60 years (Lisbon) and 42 and 53 years (Porto). As for academic qualifications, they range from a Bachelor's degree (80%) to a PhD (20%), with no other academic degrees. In terms of subject group, the History group stands out (Lisbon and Porto), followed by Visual and Technological Education (Lisbon and Porto), Physical Education and Computer Science (Lisbon). The teachers of the Lisbon institution have more than 30 years of service (60%), with 1 to 17 years as professionals in that School Grouping. Teachers from the Porto institution have between 2 and 29 years of service and have been in the educational institution between 1 and 15 years. Thus, we can mention that most of our respondents have between 29 and 30 years of service, although we also have teachers with less than 3 years of service. We can therefore consider that the team of teachers is quite experienced. The descriptive content analysis begins: the first question had to do with the relevance of the guiding principles of domestic violence prevention in the Citizenship Education curriculum. By analysing the discourse of the teachers of the Lisbon School Grouping (which does not have a Project for the Prevention of Domestic Violence), we found that, with the exception of one teacher, all the others consider the objectives and curricular guidelines of the institution's Citizenship Education Strategy to be relevant. In her justification, PL1, a 4th grade teacher, refers to the importance of finding space and time to promote the experiences of learning *"how to do"*, instilling in students the strategies of awareness and prevention of Domestic Violence, which coincide overall with the national and international standards in force. In the same sense, PL3 (9th grade teacher) emphasises the importance of students being aware of how to recognise and act in real situations, an opinion corroborated by PL4 (12th grade teacher). In another position, PL2, a 6th grade teacher, refers to the lack of transparency and depth in the treatment of this issue, assuming that it is urgent to *"explore the subject more"*. Regarding the educational institution in Porto, which is developing an autonomous Domestic Violence Prevention Program and in which the teachers participating in the study also respond positively, it should be noted that for PP1 (4th grade teacher) there is a link between the area of citizenship, the Psychology and Guidance Service, through the work carried out as a result of the school's Educational Project. In turn, PP2 (6th grade teacher) states that there is an interconnection between the objectives and curricular guidelines of the institution's Citizenship Education Strategy, as guiding principles for the prevention of domestic violence. From this perspective, it is possible to state that the institution works on improving interpersonal relationships and acquiring healthy living habits in society.

Thus, there is a clear contrast between the teachers of the two School Grouping. On the one hand, in the educational institution that does not have an autonomous Domestic Violence Prevention Project, the objectives and curricular guidelines of the citizenship education strategy still need to be emphasised. On the other hand, in the educational institution that has an autonomous Domestic Violence Prevention Project, in addition to the teachers assuming that there is an interconnection between citizenship, the educational project and the Prevention of Domestic Violence, they believe that this primary prevention learning is essential for the development of students throughout compulsory schooling. The second question aimed to ask "How are the aims set out in the school curriculum, in relation to the prevention of domestic violence, translated into the structuring documents and others". Starting with the opinions of the teachers of the Lisbon School Grouping, two teachers (from the 4th and 6th grades) peremptorily state that the structuring documents do not contain sufficient information on the Prevention of Domestic Violence. The other teachers (9th and 12th grade) were more opinionated, with PL3 arguing that the transversality of Citizenship Education *"can include this issue of domestic violence without necessarily making this subject compulsory in the curriculum"*. The other teacher (PL4) associates values such as respect, trust, tolerance and sharing with the school's structuring documents, resulting in a broad perspective of Domestic Violence Prevention. In the educational institution of Porto, which has an autonomous Domestic Violence Prevention Project, PP1 states that *"the purposes set out in the curriculum are reflected in the activities within the scope of the Educational Project, Annual Curriculum Plan and Class Curriculum Plan to raise awareness and work on DV prevention"*. Another of the participating teachers, PP2, points out examples of activities carried out that confirm that the Prevention of Domestic Violence is provided for in the curriculum and in articulation with the school's curricular documents, such as: *"PRESSE Programme (Regional Programme for Sexual Education in School Health) and (Re)Drawing Affections Programme implemented in the Education for Citizenship Strategy, in which themes such as: equality, stereotypes and prejudices were worked on..."*. Thus, triangulating the information received from the two educational establishments, we again denote a different discourse. While in the Lisbon School Grouping, the curriculum does not yet reflect the theme of Prevention of Domestic Violence, so this theme is not reflected in the institution's structuring documents, in the Porto School Grouping it is evident that the theme is present in the curriculum, which clearly results from the documents that govern the institution. Continuing the analysis, the question was "How do the aims set out in the curricular orientation of the school's citizenship education strategy, in relation to the primary prevention of domestic violence, translate into pedagogical practices?". In this regard, PL1 is very vague in her response, emphasising only that *"the school and teachers should play a more active role"*. In turn, the other teachers focus on pedagogical practices, albeit in a different way. Let's see: PL2 mentions that *"pedagogical practices are limited to awareness raising"*, a situation corroborated by PL4, while PL3 mentions that *"there is little time to develop reflection on this issue in pedagogical practices"*. In contrast, teachers from Oporto Schools Grouping report that pedagogical practices for the primary promotion of Domestic Violence Prevention are carried out at the level of collaborative work (PP1 and PP3) and curricular and extracurricular activities (PP2 and PP4). In summary, it appears that the pedagogical practices in the educational institution of Lisbon do not reflect the educational work on this problem, with only awareness of the subject. However, the educational institution of Porto stands out, which uses pedagogical practices for this theme in a more targeted way. This difference in application in the school context reflects the focus on peer training, collaborative work and reflection, which are more developed in the context of the Porto School Grouping, due to the planning and implementation of a specific project on primary prevention of Domestic Violence.

Finally, and in connection with the previous questions, it was important to know "How is it possible to reinforce the prevention of domestic violence at the classroom level? Give 2 examples of curricular activities that you have already implemented in the classroom". The teachers of the Lisbon School Grouping, unlike most of the answers given previously, in the specific case of this question, point out examples of making information leaflets, focused on raising awareness on the subject. One of the teachers (PL4, 12th grade) mentions that in the classroom they make small dramatisations that are then discussed in the class. One of the teachers (PL3, 9th grade) mentions that in her classroom they have not yet developed any action directed to this activity. It is an individualised work, with no evidence of collaborative work.

In contrast to this reality, in Porto School Grouping, we found that, in addition to giving us more detailed answers, in this educational institution webinars are promoted (PP1), dramatisation is done in classrooms and activities integrated in PRESSE are carried out (PP1 and PP2). In addition, care is taken to publicise the work developed by various institutions in this area, such as APAV (Victim Support Association) and CIG (Commission for Citizenship and Gender Equality). Collectively, in the classroom, slogans and/or striking phrases that illustrate this problem and encourage the denunciation and primary prevention of Domestic Violence are worked on.

6. CONCLUSION

The study revealed a significant difference between the two educational institutions analysed. Both work on citizenship issues, in curricular terms, in the context of the Citizenship Education Strategy. Regarding the Lisbon School Grouping, a more individualised work of the teachers is evident, reflected in the supervisory dynamics in the classroom and in community activities, regarding the issue of Domestic Violence. However, Porto School Grouping, which develops an autonomous Project on the Prevention of Domestic Violence, presents evidence in the primary prevention of Domestic Violence, involving the educational community. There is a strong sensitisation, awareness and internalisation of values, attitudes and habits that are part of a school culture that is reflected in the structuring documents and pedagogical practices, including in the classroom, with the concern to prevent Domestic Violence. This institution reflects together, valuing collaborative work, in order to implement strategies and activities capable of preventing and promoting the change of mentalities in the way of looking at this scourge. In summary, based on the partial results obtained from data analysis and comparison, it is recognised that it is not enough for the issue of Domestic Violence to be on the agenda of educational policies. It is crucial that the school adopts the theme as a priority and central to the curriculum and educational practices developed in the classroom, through specific programmes and projects for this purpose, which allow changing the culture of the school community, aiming at the primary prevention of Domestic Violence. This path of change involves linking educational tasks with the knowledge and life experiences of each student, creating conditions for the inclusion of students with different cultures and the development of positive self-concepts. This is only possible with the implementation of a curriculum that is meaningful to the pupils, coherent and configuring a democratic school.

LITERATURE:

1. Amado, J., Costa, A., & Crusoé, N. (2017). Técnica da Análise de Conteúdo. In J. Amado (Org). *Manual de Investigação Qualitativa em Educação*, 2ª ed., pp. 53-63. Imprensa da Universidade de Coimbra.
2. APAV (2022). Estatísticas Associação de Apoi às Vitómas - PAV. Relatório Anual. https://apav.pt/apav_v3/images/pdf/Estatisticas_APAV_Relatorio_Anual_2020.pdf

3. CIG - Comissão para a Cidadania e a Igualdade de Género. (2020). *Guia de Requisitos Mínimos para Programas e Projetos de Prevenção Primária da Violência Contra as Mulheres e Violência Doméstica*. CIG e SECI.
4. Council of Europe (2011). Council of Europe Convention on preventing and combating violence against women and Violence against Women and Domestic Violence. Available at: https://rm.coe.int/168046253d
5. Decreto-lei nº 55/2018 [Decree–Law no. 55/2018]. 2018. https://dre.pt/home/-/dre/115652962/ details/maximized.
6. Despacho nº 6478/2017 [Decision no. 6478/2017]. 2017. https://dre.pt/home/-/dre/107752620/ details/2/maximized
7. Direção Geral da Educação (2013). *Educação para a Cidadania - linhas orientadoras*. ttps://www.dge.mec.pt/sites/default/files/ECidadania/educacao_para_cidadania_linhas_ori entadoras_nov2013.pdf
8. Direção Geral da Educação (2017). *Estratégia Nacional de Educação para a Cidadania (ENEC)*. https://www.dge.mec.pt/estrategia-nacionaldeeducaçaoparacidadania?fbclid=Iw AR2C42HWrfxJmBTH8D5GuoaSPcQTM15SPfzAek6xZt8QdkzBsuGY005-QA
9. European Commission. (2012a). *Rethinking Education: Investing in Skills for Better Socio-Economic Outcomes*. http://ec.europa.eu/education/news/rethinking/com669_en.pdf.
10. European Commission. (2012b). *Annual Growth Survey 2013*. http://ec.europa.eu/europe2020/ pdf/ags2013_en.pdf.
11. European Council (2009). *Council Conclusions of 12 May 2009 on a Strategic Framework for European Cooperation in Education and Training ('ET 2020')*. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:119:0002:0010:en:pdf.
12. European Council (2013). *Council Conclusions on Investing in Education and Training: A Response to 'Rethinking Education: Investing in Skills for Better Socio-Economic Outcomes' and the '2013 Annual Growth Survey*. http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ educ/135467.pdf.
13. European Parliament and Council (2006). *Recommendation of the European Parliament and of the Council of 18 December 2006 on Key Competences for Lifelong Learning*. Official Journal of the European Communities L394. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ: L:2006:394:0010:0018:en:PDF
14. European Union Council (2011). *Council Conclusions on the Role of Education and Training in the Implementation of the 'Europe 2020' Strategy.* http://www.consilium.europa.eu/uedocs/cms_ data/docs/pressdata/en/educ/119282.pdf.
15. Figueiredo, C., Leite, C. & Fernandes, C. (2016). O desenvolvimento do currículo no contexto de uma avaliação de escolas centrada nos resultados: que implicações? *Currículo sem Fronteiras,* 16 (3) 646-664.
16. Flood, M., Fergus, L., & Heenan, M. (2009). *Respectful relationships education: Violence prevention and respectful relationships education in Victorian secondary schools.* Department of Education and Early Childhood Development.
17. Gimeno Sacristán (2017). *O Currículo. Uma Reflexão sobre a Prática* (3ª ed.). Editora Penso.
18. Kemmis, M. (1988). *El curriculum: Más allá de la teoria de la reproducción*. Morata.
19. Leite, C., Fernandes, P., & Figueiredo, C. (2020) National curriculum vs curricular contextualisation: teachers' perspectives, *Educational Studies*, 46 (3), 259-272, DOI: 10.1080/03055698.2019.1570083
20. Leite, C. & Rodrigues, M. (2001). *Jogos e Contos numa Educação para a Cidadania*. Instituto de Inovação Educacional.

21. Magalhães, M. J.; Pacheco, M.; Maia, M.; Dias, A. T.; Iglesias, C.; Beires, A.; Mendes, T.; Pontedeira, C., & Wiedemann, A. (2020). *Violências e violência de género: Prevenção primária na escola*. UMAR.
22. Morgado, J. (2021). Currículo de nova geração e cidadania: desafios contemporâneos. *Revista de Estudos Curriculares*, 12 (1), 25-37. https://www.nonio.uminho.pt/rec/ index.php?journal=rec&page=article&op=view&path%5B%5D=113
23. OECD (2010). *Ministerial Report on the OECD Innovation Strategy Innovation to Strengthen Growth and Address Global and Social Challenges: Key Findings.* http://www.oecd.org/sti/ 45326349.pdf.
24. Opertti, R. (2021). *Diez pistas para repensar el Curriculum: Reflexiones em progreso nº 42 sobre cuestiones actuales críticas en el currículum, aprendizaje y evaluación.* UNESCO.
25. Pacheco, J. (1996). *Currículo: teoria e práxis*. Porto Editora.
26. Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods* (4th Ed.). Sage Publications, Ltd.
27. Perrenoud, P. (1997). *Differentiated Pedagogy, from Intentions to Action*. ESF.
28. Portugal (2017). Despacho Nº 5908/2017 [Decision No. 5908/2017]." https://dre.pt/home/-/dre/ 107636120/details/2/maximized?serie=II&parte_filter=31&dreId=107636088.
29. Santomé, J. (2013). *Currículo escolar e justiça social: o Cavalo de Troia da Educação.* Penso.
30. Santos, L. L. (2007). Paradigmas que orientam a formação docente. In J. V. A. Souza (Org.), *Formação de professores para a educação básica: Dez anos de LDB* (pp. 235-252). Autêntica.
31. Young, M. (2008). *Bringing knowledge back in*. Routledge.
32. Walden, I. & Wall, L. (2014). Reflecting on primary prevention of violence against women The public health approach, ACSSA ISSUES - Australian Centre for the Study of Sexual Assault, 19. https://aifs.gov.au/sites/default/files/publication-documents/i19_0.pdf
33. World Health Organization. (2002). *World report on violence and health.* WHO
34. World Health Organization. (2013). *Global and regional estimates of violence against women: Prevalence and health effects of intimate partner violence and non-partner sexual violence.* WHO.

THIRD SECTOR MANAGEMENT DURING THE COVID-19 PANDEMIC - SOME INDICATORS AND SOME REFLECTIONS

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ABSTRACT
As of 2019, the COVID-19 Pandemic in Portugal confronted non-profit organizations with unprecedented challenges precedents, leading to the need to adapt to the new pandemic context., The HRM area was strongly affected and forced to make quick, effective, and efficient adjustments to better respond to the new requirements. This work analyzes and identifies the main changes that non-profit organizations had to make in this area, specifically in recruitment and selection practices within a pandemic context. For this purpose, those responsible for managing people in private institutions of social solidarity and equivalent institutions, with a people management structure, are from two municipalities in the northern region of Portugal. We, therefore, used an exploratory study, consisting of applying a survey by questionnaire. The study population consisted of all IPSS and institutions equivalent to IPSS, in the municipalities of Felgueiras and Lousada. The study sample all IPSS and institutions equivalent to IPSS, with a people management structure – of 27 IPSS. This investigation found that third sector institutions do not ignore people management and it´s multiple practices. They have probably not yet reached the desired development and maturity, but there is a progressive concern about "scientifically managing the most important assets" – People.
Keywords: COVID 19 Pandemic, Recruitment, Selection, Third Sector

1. INTRODUCTION
One of the 21st century trends is the growth of Third Sector institutions, asserting as an essential segment of the economy, providing work for a considerable number of people and with a tendency to increase in the next decade (Ronquillo et al., 2017). It is characterized by ensuring essential services, and as it is non-profit, the effective and efficient management of these organizations is fundamental for their success and sustainability. In this context, people management is central (Akingbola, 2006), with employees the institution's critical success or failure factor (Bastida et al., 2018). In Portugal, the Third Sector has a constitutional framework (Constitution of the Portuguese Republic, art. 82º) and comprises social economy entities, identified in the Social Economy Basic Law (Law no. 30/2013, article 4.º). The Third Sector, also called, Non-Profit Sector, corresponds, then, to the set of institutions "(...) private, voluntary and non-profit" (Anheier, 2005, p. 4), whose belonging entities are called, among other designations by Non-Profit Organizations (NPOs) (Azevedo et al., 2012). Salamon & Anheier (1998) classify these entities with five characteristics: organized; private; nonprofit distributors; self-governing, and voluntary. According to the Social Economy Satellite Account (National Institute of Statistics, 2019), in 2016, there were 71,885 social economy entities in Portugal, enabling, among other factors, many jobs (Marcos, 2016), guaranteeing 6,1% of paid employment and generating 3% of Gross Value Added. In this context, Mesch (2010) states that, considering the various elements present in the performance of an organization, the human is considered the most important. Also, AbousAssi & Jo (2017) state that people management is preponderant for the success of NPOs.

It is, therefore, possible to conclude that human resources (people), when well managed (efficiently), allow NPOs to be given a competitive advantage (Akinlade & Shalack, 2017). If human – and intellectual – capital is critical, is also highly decisive. For Akingbola (2006), people management is considered fundamental; for Ivancevich & Konopaske (2013), people management makes numerous contributions to the effectiveness of an organization. Currently, the task of attracting and retaining human capital is a signifcant challenge for people managers, mainly due to the transformation of the working world (Cofina Boost Content, 2022). Effectively, in terms of people management, several practices are fundamental. In this work we will focus only on recruitment and selection.

2. RECRUITMENT AND SELECTION

Organizations primarily focus on attracting the best professionals (Khandelwal & Kumar, 2019). They must go beyond the idea that employees represent an expense to be reduced, moving to the conception that these are preponderant elements for achieving the mission they defend. (McGinnis Johnson et al., 2017). Recruitment is considered a critical people management practice in NPOs and their strategies, influencing their effectiveness (Abrokwah et al., 2018). Calheiros (2019, p. 63) states the importance of recruitment because this is the mechanism where needs are identified "in terms of quantities and characteristics of people to be hired". Haiven (2004, pp. 83-84) recognizes the importance of "good" recruitment through what he calls "the axiom of recruiting the right people", presenting three reasons to carry out recruitment correctly, namely:

- because, as a rule, IPSS does not have high economic resources, so each expense has to be evaluated. A failed recruitment will mean a loss of capital that could have another purpose;
- the importance of choosing the person to hire. Importance should be given to the question of professionalism and therefore experience is fundamental in the new employee;
- finally, special attention should be given to the moral aspect of the recruitment process, because, as a rule, work at IPSS is quite demanding. Collaborators who maintain not harming the work performed as much as other workers should be hired.

Regarding recruitment methods, Cunha et al. (2012) refer to vast, with several traditional alternatives. One of the most traditional methods is the advertisement in the press, which has been overtaken by online advertising. The evolution of the online space has shown to be an opportunity for people management (Slavić et al., 2017). The expansion of technology has been changing how recruitment is practiced in NPOs, namely due to the change in how job opportunities are publicized (Jones, 2017). Slavić et al. (2017) argue that adopting the Internet in the recruitment has several advantages, to the detriment of more traditional techniques. However, references given by other employees, disclosure on the organization's website and spontaneous applications are methods that, despite having a smaller reach, are important (Calheiros, 2019). Selection is the second phase of the recruitment process (Kamran et al., 2015). It is the process of choosing the best option, selecting the right people, with the fundamental skills for the vacancy, according to the defined criteria (Khandelwal & Kumar, 2019). This phase may include various techniques, such as curriculum assessment, interviews, knowledge tests, simulated exercises, and cognitive ability tests, (Calheiros, 2019). In NPOs, however - mainly due to budgetary constraints - there are some constraints in retaining qualified employees and, consequently, high turnover rates, and difficult in attracting candidates with the necessary skills and competencies, for the needs (Parente, 2014). In turn, Nogueira (2014) reports some constraints related to labour flight and the difficulty in attracting and retaining human resources, especially in smaller institutions located in the country's interior.

NPOs often benefit from external financial support (Parente, 2014) and Barbosa (2016) reports that several NPOs resort to recruitment through the Institute of Employment and Vocational Training (IEFP, 2021).

3. THE COVID-19 PANDEMIC AND IPSS

The COVID-19 Pandemic affected all social domains (Shi et al., 2020) and, at a global level (Adikaram et al, 2021), had severe consequences for economies and businesses, causing impacts never experienced in organizations (Nutsubidze & Schmidt, 2021). NPOs took on increased relevance for combating poverty and other social problems, through responses aimed at the population´s needs (Oliveira et al., 2021). Portugal was heavily targeted, being one of the countries in Europe most affected (Alpalhão & Alpalhão, 2020; Gonçalves et al., 2021). NPOs were affected by the COVID-19 Pandemic in different ways (Aguinis & Burgi-Tian, 2021), affecting their workers, customers/stakeholders, and on their revenues (Olawoye-Mann, 2021). With the COVID-19 Pandemic, organizations were faced with an unprecedented situation, where it was suddenly necessary to find answers to the challenges imposed (Carnevale & Hatak, 2020), needing to outline and impose alternatives and solutions for the continuation of the service and, likewise, support its employees (Hamouche, 2021). The pandemic reinforced the importance of human resources in NPOs (Akingbola, 2020). According to Kuenzi et al. (2021) that the non-profit Sector will only be able to face the significant challenges of the pandemic if it has committed employees, both with the Sector and the mission they represent. Koirala & Acharya (2020) argue that this event could revolutionize workplaces, break the existing system, and lead organizations to change people management policies and strategies. Goncalves et al. (2021) demonstrate that several people management practices and processes have changed. The most significant changes were in recruitment and selection practices/processes, integration, training, communication and work and safety processes.

4. STUDY METHODOLOGY

With the aim of analyzing recruitment and selection practices in IPSS in two municipalities in the northern region of Portugal, considering the influence of the pandemic crisis, this study adopted a quantitative methodology. As a data collection instrument, a questionnaire survey with closed questions, open-ended and multiple-choice questions (Santos & Lima, 2019) was selected. The first group addresses existing practices in terms of people management before the COVID-19 Pandemic. The second asks about the practices that were used in a pandemic context. Finally, in the third group, the main consequences verified in the performance of the functions of the collaborators due to the COVID-19 Pandemic are questioned (information not used in this work). The application of the questionnaire complied with the ethical principles in force at the national level. The questionnaire was provided and completed online, using the Google Forms tool, and the anonymity of its participants, including the IPSS, was preserved. However, obtaining this authorization for data collection did not dispense with the request for informed consent from study participants. The tool used to complete the questionnaire was Google Docs, through Forms. The analysis was performed using the statistical program R-Studio (version 4.2.0 of 04/22/2022) to process the information gathered in the questionnaires.

4.1. Population

27 IPSS and similar institutions were surveyed (17 belonging to the municipality of Felgueiras and 10 to Lousada) that effectively have a people management structure and are in operation. Data were obtained from 24 institutions (88.8%). The completion of the questionnaire, carried out during May 2022, was carried out by the Person Responsible for People Management of each IPSS or, failing that, by whoever assumed these functions.

5. PRESENTATION OF RESULTS

5.1. People Management

In only 2 (8.3%) institutions, a person is responsible for People Management. In 22 (91.7%) institutions, this collaborator does not exist, the role being performed by the following professionals: technical director (11), social worker (3), general technical director (2), management (2), head of services and social worker (1), director of valences (1), executive director (1) and president (1).

5.2. Recruitment

In the context prior to the pandemic, recruitment in 6 (25%) institutions was internal, in 7 (29.2%) institutions it was external, and the remaining 11 (45.8%) institutions carried out mixed recruitment. In the context of a pandemic, the following changes were verified: of the 6 that carried out internal recruitment, two started to carry out mixed recruitment; there were no changes in institutions that carried out external recruitment and those that carried out mixed recruitment, one started to value internal and 2 externals. Thus, for most institutions, it was possible, in a pandemic context, to continue to develop the type of recruitment that used before the pandemic. In the period before the pandemic, of 24 institutions, 13 (54, %) assumed they had no difficulty recruiting, against 11 (45.8%) who declared having difficulties. The reported difficulties were the absence of candidates, candidates without specific training and candidates without skills to perform functions. During the pandemic, there was more extraordinary difficulty in recruiting. The absence of candidates was observed in 7 institutions. The difficulty related to candidates without specific training was found in 10 institutions. As for the difficulty of having candidates without skills to perform functions, this was reported by 7 institutions. 3 institutions indicated the existence of candidates afraid of contagion. Next, we present the results regarding the questions on recruitment methods. Before the pandemic – employee reference (2); spontaneous applications (5); IEFP partnerships (1); social networks (4); institutional website (1). During the pandemic - employee reference (2); spontaneous applications (0); IEFP partnerships (2); social networks (0); institutional website (1). 17 institutions (70.8%) assumed that they increased the volume of hiring during the pandemic, resorting to institutional support from the Portuguese state: professional internships, CEI, CEI+ and Emprego Jovem Ativo and a new program, the Measure of Support to Reinforcement of Emergency of Social and Health Facilities (MAREESS) - a program created specifically to address the constraints caused by the COVID-19 Pandemic.

5.3. Selection

We sought to find out which selection methods were used by the institutions, both in the period prior to the pandemic and in the pandemic period. The methods indicated by the institutions were: CV analysis, interviews, tests, and practical simulations. Before the pandemic, CV analysis was referenced by 23 institutions; interviews were used by 24 of the institutions, tests were carried out at one institution and two institutions used practical simulations. During the pandemic, the results were: 20 CV analysis, 22 interviews, 0 tests and 2 simulations. Regarding the interview, before the pandemic, all 24 institutions conducted interviews in person. In the pandemic 21 institutions maintained the face-to-face form, 2 institutions started to conduct telephone interviews, and one did not respond to the question. In conclusion, regarding selection, the practice remained unchanged during the pandemic. CV analysis and interviews were, in both periods, the primary means of selection. The interviews continued to be carried out face-to-face in a pandemic context. Only two (9%) institutions changed how they carry out the interviews, starting to carry them out over the phone.

6. DISCUSSION OF RESULTS

Of the 27 institutions that made up the sample, the function of people management is, assumed mainly by elements belonging to the board, emphasizing the role of the technical director (50%). Effectively, it is perceived that the presence of "human resources technicians" in the institutions studied is still deficient, having been verified, for the most part, that they are responsible for the technical direction, which in addition to all the daily management functions of social responses and valences, accumulates the responsibility of managing the people who perform functions in the organization. The study by Cabral (2021) also showed that the technical directors of the institutions assume, in addition to other functions, those of RGP. Regarding Recruitment and Selection, most institutions (70.8%) needed to hire more people in the pandemic. This data corroborates what was explained by the National Confederation of Solidarity Institutions (CNIS) (2021), which reports that many people were joining IPSS during the pandemic. Before the pandemic, institutions used various types of recruitment, namely 25% used internal recruitment, 29.2% external and 45.8% mixed. In a pandemic context, despite changes in recruitment in certain institutions (5 institutions), 78.3% of institutions continued to use the same type of recruitment used in the previous period. These conclusions are in line with the results of the study by Gameiro (2021, p. 28) which points out that, during the pandemic period, institutions "did not change the type of recruitment adopted, that is, they were able to practice during the pandemic crisis the same types of recruitment as applied before the emergence of COVID-19". There were added difficulties in attracting people. If, in the period before the pandemic, 45,8% of institutions had recruitment difficulties, the percentage rose to 58,3% in a pandemic context. For these institutions, the difficulties are related, in both periods, to the absence of candidates, the existence of candidates without specific training and/or the existence of candidates without competences to carry out functions. In the pandemic, 42.9% of the institutions that reported recruitment difficulties faced additional difficulties related to the fear of contagion, which also occurred in other sectors (Ferreira, 2021). The institutions identify the absence of candidates (50%) and the existence of candidates without specific training (63%) as essential factors for recruitment difficulties. These results corroborate the work of authors such as Akingbola (2006), Nogueira (2014) and Cabral (2021) who point out some recruitment difficulties in the period prior to the pandemic. With the present investigation, it was noticed that, in a pandemic context, due to all the known circumstances, the problem was felt with greater intensity (Vnoučková, 2020; Taylor, 2020; Bragança, 2021). It was also found that the institutions maintained the main recruitment methods in both periods under study, namely spontaneous applications, employee references and the partnership with the IEFP. Although authors such as Maurer (2020), Rocha (2021) or Varanda (2021) report the growing trend of conducting recruitment through virtual forms, the results of the institutions under study do not demonstrate this trend. This reality can be explained by the fact that they are Third Sector entities, where, in general, face-to-face activity was mandatory. Concerning the selection of candidates, no changes are reported in a pandemic context, with CV and interviews being the primary means of selection, both in the period prior to the pandemic and in a pandemic context. It was also verified that the interviews continued to be carried out in person in most institutions (91.3%), with only 8.7% of the institutions changing the means of carrying them out, namely by phone. This is not a unique case (Spurk & Straub, 2020). In several countries, including Portugal, NPOs played a significant role in the fight against the COVID-19 Pandemic, maintaining a dynamic behaviour in this regard (Dong & Lu, 2020), which led workers to be considered "essential service professionals", (Ordinance n. º 82/2020 of March 29). This document states that "during the state of emergency, the provision of services meets the importance and indispensability of the functioning of society, guaranteeing the readiness of all services essential to the realization of the rights, freedoms and guarantees of citizens" (Ordinance n. º 82 /2020 of March 29, 2020, p. 2).

The same document portrays the IPSS as essential entities within the scope of "social action and social support services" (Ordinance n. º 82/2020 of March 29, 2020, p. 5).

7. CONCLUSION

The present investigation found that Third Sector institutions do not ignore people management and it's multiple practices/tools but have not yet reached the desired development and maturity. However, it appears that concerns are progressive in "scientifically managing the most important assets" – People. 70.8% of institutions had a greater need for recruitment in the pandemic rather than in to the previous period. Although with some changes, the majority practised the same type of recruitment (internal, external, or mixed) that as used before the pandemic. There were recruitment difficulties; in a pandemic context, more significant number of institutions reported experiencing increased difficulties. The main difficulties pointed out by the institutions in both periods were the absence of candidates, the existence of candidates without specific training and/or the existence of candidates without competences to carry out functions. The institutions used several sources to carry out the recruitment. In the pandemic, the partnership with the IEFP was an extensively used strategy, with MAREES being a widely requested recruitment program. CV analysis and interviews are the main methods of selecting people in the two periods under study. Contrary to most of what the bibliography reports, in 91,3 % of the institutions studied, the selection interviews continued to be conducted in person, whereas the online interviews were not much employed for such purposes.

LITERATURE:

1. AbouAssi, K., & Jo, S. (2017). Partnerships Among Lebanese Nonprofit Organizations: Assessing the Impact on Human Resource Capacity. *American Review of Public Administration*, *47*(6), 687–698. https://doi.org/10.1177/0275074015613850
2. Abrokwah, E., Yuhui, G., Agyare, R., & Asamany, A. (2018). Recruitment and selection practices among non-governmental organizations (NGOs) in Ghana. *Labor History*, *59*(2), 185–201. https://doi.org/10.1080/0023656X.2018.1422417
3. Adikaram, A. S., Priyankara, H. P. R., & Naotunna, N. P. G. S. I. (2021). Navigating the Crises of COVID-19: Human Resource Professionals Battle Against the Pandemic. *South Asian Journal of Human Resources Management*, *8*(2), 192–218. https://doi.org/10.1177/23220937211018021
4. Aguinis, H., & Burgi-Tian, J. (2021). Talent management challenges during COVID-19 and beyond: Performance management to the rescue. *BRQ Business Research Quarterly*, *24*(3), 233–240. https://doi.org/10.1177/23409444211009528
5. Akingbola, K. (2006). Strategy and HRM in nonprofit organizations: Evidence from Canada. *International Journal of Human Resource Management*, *17*(10), 1707–1725. https://doi.org/10.1080/09585190600964350
6. Akingbola, K. (2020). COVID-19: The Prospects for Nonprofit Human Resource Management. *Canadian Journal of Nonprofit and Social Economy Research*, *11*(1), 16-20. https://doi.org/10.29173/cjnser.2020v11n1a372
7. Akinlade, D., & Shalack, R. (2017). Strategic Human Resource Management In Nonprofit Organizations- A Case For Mission-Driven Human Resource Practices. *Global Journal of Management & Marketing*, *1*(1), 121–146.
8. Alpalhão, V., & Alpalhão, M. (2020). Impact of COVID-19 on physical therapist practice in Portugal. *Physical Therapy*, *100*(7), 1052–1053. https://doi.org/10.1093/ptj/pzaa071
9. Anheier, H. K. (2005). *Nonprofit Organizations: Theory, management, policy*. Routledge.
10. Azevedo, C., Franco, R.C., & Meneses, J.W. (2012). *Gestão das Organizações Sem Fins Lucrativos- O Desafio da Inovação Social* 15-27. PositivAgenda-Edições Periódicas e Multimédia, Lda.

11. Barbosa, A. F. C. (2016). *A Igualdade de Género nas Políticas de Recrutamento e Seleção nas IPSS* [Dissertação de Mestrado, Faculdade de Economia - Universidade do Porto]. Repositório Aberto da Universidade do Porto. https://repositorio-aberto.up.pt/handle/10216/84476

12. Bastida, R., Marimon, F., & Carreras, L. (2018). Human Resource Management Practices and Employee Job Satisfaction in Nonprofit Organizations. *Annals of Public and Cooperative Economics*, *89*(2), 323–338. https://doi.org/10.1111/apce.12181

13. Bragança, A., Horta, M., Martins, F., Pinto, F., Marcos, V., Mendes, A., Castro, J., & Alves, S. (2021). *O Impacto da Pandemia de COVID-19 nas IPSS e seus Utentes em Portugal*. Universidade Católica Portuguesa. F. Martins & F. Pinto (coord.). Retrieved from https://www.ucp.pt/sites/default/files/files/CRP/docs/2021-03_ATESUCP_RelatorioCOVID-19nasIPSS.pdf

14. Cabral, L. B. D. S. (2021). *Efeitos da Pandemia da COVID-19 nos RH: O caso dos profissionais com cargos de Direção Técnica em estruturas residenciais* [Dissertação de Mestrado, Instituto Superior de Contabilidade e Administração do Porto – Politécnico do Porto]. Repositório P. Porto. https://recipp.ipp.pt/handle/10400.22/19172

15. Calheiros, A. (2019). *Recrutamento e Seleção - Da Teoria à Prática* (1º Ed). Editora RH.

16. Carnevale, J. B., & Hatak, I. (2020). Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *Journal of Business Research*, *116*(May), 183–187. https://doi.org/10.1016/j.jbusres.2020.05.037

17. CNIS (Confederação Nacional das Instituições de Solidariedade) (2021). Governo prolonga MAREES até ao final do ano. *Solidariedade - Jornal da Confederação Nacional das Instituições de Solidariedade. 2ª Série, nº264*, 10. https://www.solidariedade.pt/site/mostrapdf/14204

18. Cofina Boost Content. (2022). *Como atrair e reter talentos nas empresas?* Consultado em 2022, 09 Maio. https://vidasustentavel.sabado.pt/futuro-do-trabalho/como-atrair-e-reter-talentos-nas-empresas/

19. *Constituição da República Portuguesa* https://www.parlamento.pt/Legislacao/Paginas/ConstituicaoRepublicaPortuguesa.aspx

20. Cunha, M. P., Rego, A., Cunha, R. C., Cabral-Cardoso, C., Marques, C. A., & Gomes J. F. S. (2012). *Manual de Gestão de Pessoas e do Capital Humano* (2ª edição). Edições Sílabo.

21. Decreto-Lei 119/83, de 25 de fevereiro. *Diário da Républica, Série I* (46) https://dre.pt/dre/legislacao-consolidada/decreto-lei/1983-165201113 ;

22. Dong, Q., & Lu, J. (2020). In the Shadow of the Government: The Chinese Nonprofit Sector in the COVID-19 Crisis. *American Review of Public Administration*, *50*(6–7), 784–789. https://doi.org/10.1177/0275074020942457

23. Ferreira, H. (2021). COVID-19 na Grestel: a superação. In J. Bancaleiro & N. Moreira (Coods.), *Gestão de Pessoas em Tempo de Pandemia,* 94-98. Editora RH.

24. Gameiro, M. S. C. (2021). *O Impacto da Covid-19 em Processos de Recrutamento*. [Dissertação de mestrado, Escola Superior de Tecnologia e Gestão – Instituto Politécnico de Leiria]. IC-Online Politécnico de Leiria. https://iconline.ipleiria.pt/handle/10400.8/6363

25. Giddens, A. (2008). *Sociologia* (6º Edição). Fundação Calouste Gulbenkian.

26. Gonçalves, S. P., Dos Santos, J. V., Silva, I. S., Veloso, A., Brandão, C., & Moura, R. (2021). COVID-19 and people management: The view of human resource managers. *Administrative Sciences*, *11*(3), 69. https://doi.org/10.3390/admsci11030069

27. Haiven, J. (2004). *How do Nonprofit Recruit Paid Staff?*. Proceedings of the Atlantic Schools of Business Conference (81-92). Mount Saint Vincent University, Halifax, NS. Retrieved from: https://library2.smu.ca/xmlui/bitstream/handle/01/25403/asb_proceedings_2004.pdf#page=81

28. Hamouche, S. (2021). Human resource management and the COVID-19 crisis: implications, challenges, opportunities, and future organizational directions. *Journal of Management and Organization*, 1–16. https://doi.org/10.1017/jmo.2021.15

29. Hill, M. M. & Hill, A. (1998). *A Construção de um Questionário*. Dinâmia Centro de Estudos Sobre a Mudança Socioeconómica.

30. Hill, M. M. & Hill, A. (2005). *Investigação por questionário* (2ª Ed.). Edições Sílabo, Lda.

31. IEFP – Instituto do Emprego e Formação Profissional - https://www.iefp.pt/apoios-incentivos

32. Instituto Nacional de Estatística. (2019). *Conta Satélite da Economia Social-2016*. 1–25.

33. Ivancevich, J. M. & Konopaske, R. (2013). *Human Resource Management* (12th ed.). McGraw-Hill/Irwin.

34. Jones, J. A. (2017). Technology and Human Resource Management in Nonprofit Organizations. In J. K. A. Word & J. E. Sowa (Eds.), *The nonprofit human resource management handbook From theory to practice*, 339-358. Routledge Taylor & Francis.

35. Kamran, A., Dawood, J & Hilal, S. B. (2015). *Analysis of the Recruitment and Selection Process*. In J. Xu et al. (eds.), *Proceedings of the Ninth International Conference on Management Science and Engineering Management*, Advances in Intelligent Systems and Computing (1357-1375). 362. DOI 10.1007/978-3-662-47241-5_114.

36. Khandelwal, A., & Kumar A. (2019). Analysis of impact of recruitment and selection at the managerial level. *Proceedings of the 2019 6th International Conference on Computing for Sustainable Global Development, INDIACom*, 1194–1199.

37. Koirala, J., & Acharya, S. (2020). Dimensions of Human Resource Management Evolved with the Outbreak of COVID-19 (April 24). Available at SSRN: http://dx.doi.org/10.2139/ssrn.3584092

38. Kuenzi, K., Stewart, A. J., & Walk, M. (2021). COVID-19 as a nonprofit workplace crisis: Seeking insights from the nonprofit workers' perspective. *Nonprofit Management and Leadership*, 1–12. https://doi.org/10.1002/nml.21465

39. Lei 76/2015, de 28 de julho. *Diário da Républica, Série I* (145) https://dre.pt/dre/detalhe/lei/76-2015-69879421

40. Lei n.º 93/2019, de 04 de setembro. *Diário da Républica, Série I* (169) https://dre.pt/dre/detalhe/lei/93-2019-124417106

41. Lei nº 30/2013, de 8 de maio. *Diário da Républica, Série I* (88) https://dre.pt/dre/detalhe/lei/30-2013-260892

42. Marcos, V. (2016). A gestão de recursos humanos nas Organizações Não Governamentais de Cooperação para o Desenvolvimento portuguesas: uma análise interpretativa exploratória. *Sociologia: Revista Da Faculdade de Letras Da Universidade Do Porto*, *32*, 61–81. https://doi.org/10.21747/0872-3419/soc32a3

43. Maurer, R. (2020, March 17). Job Interviews Go Virtual in Response to COVID-19. *Talent Acquisition SHRM*. https://www.shrm.org/resourcesandtools/hr-topics/talent-acquisition/pages/job-interviews-go-virtual-response-covid-19-coronavirus.aspx

44. McGinnis, J. J., Piatak, J. S., & Ng, E. (2017). Managing Generational Differences in Nonprofit Organizations. In J. K. A. Word & J. E. Sowa (Eds.), *The nonprofit human resource management handbook From theory to pratice* (pp. 304-322). Routledge Taylor & Francis.

45. Mesch, D. J. (2010). Management of human resources in 2020: The outlook for nonprofit organizations. *Public Administration Review*, *70*(SUPPL.1), 173–174. https://doi.org/10.1111/j.1540-6210.2009.02124.x

46. Nogueira, R. A. M. (2014). Gestão de Recursos Humanos no Terceiro Setor: O caso das Instituições Particulares de Solidariedade Social. [Dissertação de Mestrado, Instituto Superior Miguel Torga – Escola Superior Altos Estudos]. Repositório Instituto Superior Miguel Torga. https://repositorio.ismt.pt/handle/123456789/627
47. Nutsubidze, N., & Schmidt, D. A. (2021). Rethinking the role of HRM during COVID-19 pandemic era: Case of Kuwait. *Review of Socio-Economic Perspectives*, *6*(1), 1–12. https://doi.org/10.19275/RSEP103
48. Olawoye-Mann, S. (2021). Surviving a Pandemic: The Adaptability and Sustainability of Nonprofit Organizations through COVID-19. *Canadian Journal of Nonprofit and Social Economy Research*, *12*(S1), 82–85. https://doi.org/10.29173/cjnser.2021v12ns1a435
49. Oliveira, M., Sousa, M., Silva, R., & Santos, T. (2021). Strategy and human resources management in non-profit organizations: Its interaction with open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*,75 1–20. https://doi.org/10.3390/joitmc7010075
50. Parente, C. (2014). A gestão de recursos humanos assalariados. In C. Parente (coord.), *Empreendedorismo Social em Portugal*,176-200. Universidade do Porto - Faculdade de Letras.
51. Portaria nº82/2020, de 29 de março de 2020, *Diário da república, Série I* (62-B) https://files.dre.pt/1s/2020/03/062b00/0000200007.pdf
52. Rocha, R. (2021). (R)evolução em tempos de pandemia. In J. Bancaleiro & N. Moreira (Coods.), *Gestão de Pessoas em Tempo de Pandemia,* 212-216. Editora RH.
53. Ronquillo, J.C., Miller A., & Drury I. (2017). Trends in Nonprofit Employment. In J. K. A. Word & J. E. Sowa (Eds.), *The nonprofit human resource management handbook From theory to practice*, 29-43. Routledge Taylor & Francis.
54. Salamon, L. M., & Anheier, H. K. (1998). Social Origins of Civil Society: Explaining the Nonprofit Sector Cross-Nationally. *Voluntas*, *9*(3), 213–248. https://doi.org/10.1023/A:1022058200985
55. Santos, L.A.B., & Lima, J.M.M. (Coord.). (2019). *Orientações metodológicas para a elaboração de trabalhos de investigação* (2.ª ed., revista e atualizada). Cadernos do IUM, 8. Lisboa: Instituto Universitário Militar.
56. Shi, Y., Jang, H. S., Keyes, L., & Dicke, L. (2020). Nonprofit Service Continuity and Responses in the Pandemic: Disruptions, Ambiguity, Innovation, and Challenges. *Public Administration Review*, *80*(5), 874–879. https://doi.org/10.1111/puar.13254
57. Slavić, A., Bjekić, R., & Berber, N. (2017). The role of the internet and social networks in recruitment and selection process. *Strategic Management*, *22*(3), 36–43.
58. Spurk, D., & Straub, C. (2020). Flexible employment relationships and careers in times of the COVID-19 pandemic. *Journal of Vocational Behavior*, *119*(May), 1–4. https://doi.org/10.1016/j.jvb.2020.103435
59. Taylor, S., Landry, C. A., Paluszek, M. M., Fergus, T. A., McKay, D., & Asmundson, G. J. G. (2020). COVID stress syndrome: Concept, structure, and correlates. *Depress Anxiety*, *37*(8), 706–714. https://doi.org/10.1002/da.23071
60. Varanda, A. M. (2021). Comunicação, humanização e liderança. In J. Bancaleiro & N. Moreira (Coords.), *Gestão de Pessoas em Tempo de Pandemia,* 166-269. Editora RH.
61. Ventura, R. (2021). O tempo do novo olhar sobre o trabalho. In J. Bancaleiro & N. Moreira (Coord.), *Gestão de Pessoas em Tempo de Pandemia,* 270-273. Editora RH.
62. Vnoučková, L. (2020). The Impact of COVID-19 on Human Resource Management. *Revista Latinoamericana De Investigación Social*, *3*(1), 18-21. Retrieved from https://revistasinvestigacion.lasalle.mx/index.php/relais/article/view/2614

THE INFLUENCE OF GEOPOLITICAL TENSIONS ON THE ECONOMY OF THE DRUZHBA OIL PIPELINE

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ABSTRACT
One of the largest oil pipelines in the world, the Druzhba pipeline carries crude oil from Russia to several European nations. Geopolitical tensions between Russia and other nations, which can have significant economic repercussions, frequently affect its efficient operation. The Druzhba pipeline's economic impact is examined in this research study, which focuses on the pipeline's historical context, the present condition, and prospective future developments. This article offers important insights into the interaction between politics and energy economics by analyzing the impact of geopolitical tensions on the Druzhba pipeline's economy.
Keywords: *Geopolitics, Druzhba pipeline, Energy security, International relations, Geopolitical conflicts, Global economy*

1. INTRODUCTION
Geopolitical conflicts are well known for influencing the dynamics of the world economy. The smooth operation of vital infrastructure can be disrupted by these tensions, in particular the energy sector. The latest example is Russia's war against Ukraine. Thus, geopolitical tensions can and actually have an influence on the Druzhba oil pipeline, one of the biggest and most significant pipelines in the world that carries crude oil from Russia to many European countries. The efficiency, stability, and general economic viability of the pipeline can be greatly impacted by these conflicts, which frequently have both direct and indirect economic effects. The Druzhba pipeline's historical background sheds light on both its significance and susceptibility to geopolitical conflicts. The pipeline was built to assist the transportation of Soviet oil to European markets and began as a symbol of cooperation between the Soviet Union and many European nations in the 1960s. The goal at the time was to maintain a reliable energy supply and promote economic growth, therefore energy interdependence and collaboration were given top priority. The collapse of the Soviet Union and the rise of new political and economic power dynamics, however, have caused a significant change in the geopolitical environment since that time. The shifting geopolitical landscape has brought about challenges and uncertainties for the Druzhba pipeline. Geopolitical tensions between Russia and other nations, such as territorial disputes, trade conflicts, or political rivalries, can directly impact the pipeline's operation. For instance, energy-related sanctions or embargoes imposed on Russia can disrupt the normal flow of oil through the pipeline, leading to interruptions in supply and potential economic losses.

Additionally, political conflicts or disputes involving transit countries or neighbouring states can create logistical challenges and increase operational risks for the pipeline. Geopolitical tensions' effects on the Druzhba pipeline's economy go beyond the pipeline's current functioning. Oil supply disruptions can cause variations in world oil prices, which can influence energy markets and the economic health of both exporting and importing nations. As nations grow more conscious of their dependence on a single energy transit route, energy security concerns may surface, motivating attempts to diversify energy sources and lessen susceptibility to geopolitical shocks. Geopolitical conflicts can also discourage investment in the pipeline's infrastructure, preventing the increase of its capacity and possibly preventing regional economic integration. We may learn more about the complex interplay between politics and energy economics by investigating the historical backdrop, present state, and potential future of the pipeline. The study will examine how the operation, supply chain, and economic performance of the pipeline are impacted by geopolitical tensions. It will also look at possible plans of action and improvements to the economic resilience of the pipeline in order to lessen the damaging consequences of these tensions. In conclusion, geopolitical tensions have a big impact on the Druzhba oil pipeline's economy, demonstrating how politics and energy economics are intertwined. Critical insights into the dangers, prospects, and potential policy consequences may be gained by understanding the historical backdrop, existing difficulties, and future developments of the pipeline in the context of geopolitical conflicts. This study intends to contribute to a thorough knowledge of the wider consequences of geopolitical dynamics on energy infrastructure and the global economy.

2. HISTORICAL CONTEXT

A complex tapestry of political, economic, and strategic considerations shaped the inception, growth, and continuous operations of the Druzhba oil pipeline throughout its historical setting. It is essential to examine the pipeline's beginnings, significant turning points, and the changing geopolitical landscape in order to properly comprehend its economic importance and its susceptibility to geopolitical conflicts. The 1960s saw the development of the Druzhba oil pipeline project in response to the rising demand for Soviet oil in Europe. By establishing a dependable supply line to its allies in Eastern Europe, the Soviet Union hoped to lessen their reliance on rival vendors and ensure their allegiance within the larger Cold War environment. Construction on the Druzhba pipeline started in 1960 after the first contract for its construction was signed in 1964. The pipeline, which connected oil reserves in western Siberia with its final location in Europe over 4,000 kilometres (2,485 miles), required extensive engineering work. Several nations, notably the Soviet Union, Poland, Czechoslovakia, East Germany, Hungary, and Bulgaria, had to work closely together on the project. The Druzhba pipeline was intended to serve as a representation of the communist bloc's dependency on energy and economic unification. The pipeline sought to promote economic growth, industrial development, and political unity among the member states by giving Eastern European nations a direct and secure supply of crude oil. The pipeline offered the Soviet Union a chance to strengthen its hegemony over the energy market and expand its political sway over Eastern Europe. It enabled the Soviet Union to exert control over its allies and ensure their allegiance to the Soviet Union by using its enormous oil riches as leverage. The Druzhba pipeline provided energy security and economic stability for the communist countries of Eastern Europe. These nations acquired a steady and affordable supply of crude oil, enabling them to power their industries and more effectively fulfill domestic energy demands by decreasing their reliance on potentially unreliable or politically sensitive transit routes. "However, the United States believed that Europe's deeper involvement in energy transactions with the Soviet Union was potentially dangerous. The US Senate held a series of secret hearings on the topic in July 1962" (Lee and Connolly 2016, 110).

In November 1962 the United States succeeded in imposing a secret resolution in the North Atlantic Council "that strongly encouraged member states to immediately halt the export of large-diameter pipes to the USSR and its allies". But the embargo did not last long: „Britain and Italy chose to interpret the NATO resolution as a recommendation rather than an order and fulfilled their contracts with the USSR" (Ibid). The fall of the Soviet Union in 1991 resulted in profound changes to the geopolitical environment. Redefining the states' political, economic, and energy links was difficult for the newly independent nations. New contracts for the management, upkeep, and income sharing of the Druzhba pipeline had to be negotiated as a result of the communist bloc's dissolution. Russia acquired ownership of the Druzhba pipeline network when it succeeded the Soviet Union. However, the pipeline passed through areas that are now sovereign nations, such as Belarus, Ukraine, and other Eastern European nations. Due to the complicated dynamics brought about by this new geopolitical situation, transit nations are now vying for attractive economic conditions in exchange for the transit of Russian oil.

3. GEOPOLITICAL TENSIONS AND ECONOMIC CONSEQUENCES

Geopolitical tensions, notably those between Russia and the transit nations, have significantly impacted the Druzhba pipeline's economy. Its operation has been interrupted and disrupted because of disputes over transit costs, tariffs, management of the pipeline's operations, and political issues. Particularly in recent years, disagreements between Russia and Ukraine have attracted a lot of attention. Tensions over petroleum costs, transit taxes, and territorial concerns are just a few of the tensions that have arisen because of the two nations' worsening relationship. These issues have directly affected the Druzhba pipeline, causing delays in oil shipments and operating difficulties that have resulted in financial losses and raised questions about the infrastructure's dependability. The Druzhba oil pipeline's historical setting demonstrates the complex interactions between geopolitics, energy security, and commercial interests. The pipeline's beginnings as an example of the communist bloc's energy dependency, its adaptation to post-Soviet geopolitical changes, and the obstacles and conflicts that followed highlight the difficulties involved with energy infrastructure in a shifting political environment. For evaluating the pipeline's economic stability and susceptibility to geopolitical conflicts, it is essential to understand its historical backdrop. It offers insightful information on the wider effects of political conflicts, transit discussions, and changing energy strategy on the functionality, dependability, and future growth of the Druzhba oil pipeline. The Druzhba oil pipeline economy is impacted by geopolitical tensions on several levels, including energy markets, regional economies, trade balances, investment patterns, and geopolitical dynamics. A thorough knowledge of the pipeline's significance and the interactions between politics, energy economics, and economic development may be gained by carefully analysing the economic ramifications of the project. Global oil prices and the energy markets may be greatly impacted by geopolitical concerns around the Druzhba oil pipeline. Political unrest or pipeline failures that cause delays in oil supplies can lead to supply uncertainty and price swings on the world oil market. Countries that produce and use oil are also impacted by these changes. Increased transportation costs for both businesses and consumers, as well as higher production costs for sectors, can all have an influence on inflation rates. Additionally, managing energy budgets, trade deficits, and general economic stability may be difficult for oil-importing nations. Countries diversify their energy supplies and transit methods in response to geopolitical tensions and outages in the Druzhba pipeline, which cause worries about energy security. Exporting nations that depend heavily on the pipeline should look at alternate sources of supply to lessen their exposure to outages. This effort at diversification may result in expenditures in the development of renewable energy sources, the investigation of other oil transportation routes, or domestic energy production. Efforts to increase energy security influence economic changes in the energy sector as well as regional and international energy market dynamics.

Energy industry investment choices and infrastructure development are impacted by geopolitical tensions and concerns surrounding the Druzhba pipeline. Potential investors may be discouraged from contributing money to oil production, transportation projects, or infrastructure improvements that depend on the pipeline if perceived dependability problems are present. The creation of new oil fields, capacity increases, and technical breakthroughs can all be hampered by decreased investment. This can therefore have an impact on job prospects, economic expansion, and regional development. The Druzhba pipeline's efficiency and stability are important for regional trade dynamics and economic integration. Trade flows, diplomatic connections, and economic links between nations can all be strained by pipeline-related disruptions or disputes. Energy supply interruptions, trade disputes, and embargoes can all have a significant impact on export profits, import costs, and total trade balances. Additionally, disputes over the pipeline may obstruct efforts to integrate the regional economy, such as international infrastructure projects or joint ventures, which would harm economic cooperation and potential profits from resource sharing. The geopolitical dynamics and regional stability relate to the economic effects of the Druzhba pipeline. Geopolitical conflicts, particularly those between Russia and the transit nations, can affect other spheres of political and economic connections and influence regional stability. Tightened diplomatic ties, economic sanctions, or trade restrictions may be the consequence of disagreements over transit fees, control over the pipeline's operations, or political problems. Such geopolitical issues can impede regional integration attempts, investment flows, and economic collaboration, leading to uncertainty that undermines economic progress. Environmental concerns and the continuing energy transition collide with geopolitical conflicts and interruptions in the pipeline. The pipeline's reliance on fossil fuels may present difficulties as nations work to cut carbon emissions and switch to renewable energy sources. The long-term economic feasibility of the pipeline may be impacted by shifting market trends toward renewable energy, harsher environmental restrictions, and international climate obligations. To lessen their reliance on oil shipped through the pipeline, nations may give renewable energy infrastructure and sustainable energy alternatives higher priority when making investments. The importance of the pipeline is shaped by the interaction of politics, energy economics, and economic development, which also has an impact on choices made about investments in energy and regional cooperation. For policymakers, industry stakeholders, and nations depending on the Druzhba pipeline to manage economic obstacles, reduce risks, and make decisions that support sustainable economic growth and energy security, they must have a thorough understanding of these complex processes. The Druzhba oil pipeline's future is impacted by several variables, including changes in geopolitics, technical development, and global energy trends. A thorough grasp of the possible changes, difficulties, and opportunities that lie ahead for the pipeline is provided by a complete examination of these elements.

4. CURRENT CONDITION

A number of elements, including operational difficulties, maintenance efforts, geopolitical dynamics, market trends, and regional energy security considerations, have contributed to the Druzhba oil pipeline's current state. A thorough knowledge of the pipeline's current situation and its consequences for energy markets and local economies may be obtained by carefully examining these components. Continuous maintenance and modernisation initiatives are crucial to the pipeline's lifetime and effective functioning. To address concerns regarding pipeline integrity, anti-corrosion measures, and equipment dependability, routine inspections, repairs, and upgrades are carried out. Through these actions, the danger of leaks, spills, and equipment breakdowns is reduced, assuring the pipeline's secure and dependable operation. In order to increase operational effectiveness and reaction capabilities, modernization initiatives also emphasize the implementation of cutting-edge technology, such as improved monitoring

systems and leak detection tools. The Druzhba pipeline's capacity and efficiency are constantly being improved. The pipeline's entire infrastructure will be improved, modern metering systems will be installed, and flow rates will be optimized, energy losses will be reduced, and throughput capacity will be increased. These improvements help the pipeline meet the rising demand for energy and guarantee a more effective transportation system. The Druzhba pipeline's present state is impacted by shifting market dynamics and initiatives to diversify energy sources. Europe is looking into alternate energy sources and reducing its dependency on Russian oil due to worries about energy security and the environment. The pipeline's economic feasibility and potential use in the future may be affected by this change in market demand. The region's energy environment is changing, which might have an influence on the pipeline's long-term prospects. These efforts include promoting renewable energy sources, diversifying energy sources, and building links with other pipelines and transit routes. For the Druzhba pipeline to continue operating and to ensure regional energy security, cooperation amongst the participating nations is still essential. The pipeline's robustness and continuous oil delivery are aided by bilateral and international agreements, cooperative maintenance projects, emergency response systems, and information-sharing frameworks. In order to guarantee the reliable delivery of oil and to increase regional energy security, collaboration between transit and destination nations must be strengthened. This promotes a feeling of shared responsibility, trust, and collaborative action. The current state shows the interaction of geopolitical pressures, upkeep initiatives, market trends, and regional energy security issues. It is a challenging environment that needs ongoing focus and aggressive actions to handle problems, boost operational effectiveness, and adjust to shifting market trends. In order to maintain the pipeline's economic sustainability and energy stability in the area, stakeholders must be able to make well-informed decisions about investment plans, energy diversification, and partnership frameworks.

5. CONCLUSION

The geopolitical landscape and the capacity of the participating nations to promote collaboration will determine the fate of the oil pipeline. For the pipeline to continue operating and to be economically viable, it is essential that tensions between transit and receiving nations be reduced, disagreements get settled, and solid partnerships are built. A favourable atmosphere for the pipeline's future expansion may be created by having discussions, negotiating reasonable transit agreements, and supporting regional energy cooperation projects. To overcome geopolitical obstacles and guarantee long-term stability, it will be crucial to strengthen diplomatic connections and foster trust among stakeholders. The future of the pipeline will be impacted by the current global energy shift. The demand for oil may alter as nations work to cut greenhouse gas emissions and switch to renewable energy sources. Stakeholders in the pipeline must be aware of these changes and adjust as necessary. The pipeline may be adapted to changing energy patterns by investigating potential for diversification, such as shipping alternative fuels like hydrogen, creating infrastructure for carbon capture and storage, or making investments in renewable energy projects. The pipeline's long-term economic viability may be improved by adopting sustainable energy practices and contributing to the energy transition. Also, the future depends on spending on infrastructural improvements and technical breakthroughs. Utilizing cutting-edge technology may boost operational effectiveness, safety, and environmental sustainability. Examples include sophisticated monitoring systems, real-time data analytics, and smart pipeline management. It is possible to increase the pipeline's capacity, dependability, and flexibility by upgrading its infrastructure, including its pumps, valves, and storage facilities. Reduce the possibility of interruptions and lessen the effects on the environment by putting modern leak detection systems in place and stepping up preventative maintenance procedures. The pipeline will be prepared for success in the future by welcoming innovation and using cutting-edge technology.

Promoting regional integration and connection is vital for the future growth of the pipeline. It is possible to promote economic integration, increase efficiency, and unleash synergies across transit and receiving nations by strengthening infrastructural linkages, aligning regulatory frameworks, and launching cross-border energy cooperation efforts. Collaborative initiatives to establish linked energy networks, such as gas and electricity linkages, can produce a more robust and resilient energy environment. Strengthening regional cooperation mechanisms, such as cooperative emergency response systems and information sharing platforms, may boost energy security and contribute to the pipeline's long-term economic sustainability. Infrastructure improvements, maintenance tasks, and capacity increases can be funded through luring private investments, encouraging public-private partnerships, and leveraging international financial institutions. Attracting money will depend on offering advantageous investment conditions, transparent regulatory frameworks, and proof that the pipeline is economically viable. The pipeline will be financially successful in the long run if a sustainable financial model is maintained, and efficient risk management techniques are put into practice.

The future development will depend heavily on addressing environmental concerns and involving stakeholders. Gaining public support and securing the pipeline's social license to operate would require adopting sustainable practices, reducing environmental consequences, and actively interacting with local communities, environmental organizations, and indigenous people. Environmental stewardship shall be demonstrated by carrying out thorough environmental assessments, putting into practice strong environmental management plans, and monitoring and reducing any ecological hazards. The pipeline will be more socially and environmentally sustainable if stakeholders are actively involved in decision-making processes and their input is taken into consideration. In conclusion, geopolitical dynamics, energy transition objectives, technical improvements, regional integration initiatives, investment and finance methods, and environmental sustainability concerns will all have an impact on how the Druzhba oil pipeline develops in the future. It takes proactive participation, teamwork, and a long-term strategy that is in line with changing energy trends and universal sustainability objectives to navigate these challenges. The pipeline may adapt to changing conditions, improve its economic viability, and support long-term regional energy security and economic growth by embracing innovation, encouraging cooperation, and adopting sustainability principles. In addition to that, we should bear in mind that, as Jeronim Perović points out, "if the energy bridge between Russia and Europe collapses, then Russia will move further away from Europe. However, a Russia so isolated from Europe may be an even more uncomfortable partner for the West. At a time of geopolitical upheaval, economic ties between Russia and Europe can have a calming effect" (Perović 2021, 82). The only way to escape in the long run that dependency is to get away from fossil fuels, which is not realistic to achieve in the next decades. Today, in Europe's energy mix fossil fuels still have a share of seventy percent.

LITERATURE:
1. Blinken, Antony. 1987. Ally versus Ally. America, Europe and the Siberian Pipeline Crisis. New York: Praeger.
2. Lee, Jae-Sung, and David Connolly, 2016. „Pipeline Politics between Europe and Russia: A Historical Reviewfrom the Cold War to the Post-Cold War." The Korean Journal of International Studies 14(1), 105-129.
3. Lax, Howard L. 1983. Political Risk in the International Oil and Gas Industry. Boston: International Human Resources Development Corporation.
4. Müller, Christian Th. 2010. "Der Erdgas-Röhren-Konflikt 1981/82." In Bernd Greiner et al., eds., Ökonomie im Kalten Krieg. Hamburg: Hamburger Edition, 501–520.
5. Perović, Jeronim. 2021. „Energieflüsse und Embargos: Ost-West-Beziehungen im 20. Jahrhundert." Osteuropa 71 (10-12), 59-81.

6. Yermakov, Vitaly. 2019. „The Druzhba Pipeline Crisis: The Lessons for Russia and for Europe.“ Oxford: The Oxford Institute for Energy Studies. Accessed at https://www.oxfordenergy.org/wpcms/wp-content/uploads/2019/06/The-Druzhba-Pipeline -Crisis-The-Lessons-for-Russia-and-for-Europe.pdf (July 5, 2023).