Varazdin Development and Entrepreneurship Agency and **University North**
in cooperation with
ECEO – Universidade Lusofona
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
Polytechnic of Medimurje in Cakovec

Economic and Social Development

74th International Scientific Conference on Economic and Social Development

Book of Proceedings

Editors:
Ana Lorga da Silva, Ljerka Luic, Abdelhamid Nechad

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VALUATION OF THE PARAMETERS IMPORTANT FOR THE APPEARANCE OF SERBIAN ENTERPRISES IN NEW MARKETS

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ABSTRACT

The subject matter of the research study conducted in this paper is reduced to the valuation of the parameters important for the appearance of Serbian enterprises in markets new to them, market niches or target foreign markets. The study is focused on the observation of the business plan of an enterprise, i.e. on the assessment of the justification for the implementation of an appropriate business idea, with the task to ensure that the enterprise will conquer additional markets, which can ensure the expected business result in interaction with tracking consumer demand, creating a quality marketing plan, innovations in doing business and with appropriate government support. The paper has the purpose to determine an adequate framework of the appearance platform and demonstrate the results of the forecast for conquering new business niches by national enterprises, also including business internationalization, and give an interpretation of the outcome in the context of the ruling business policy. The imperative of correlational analysis is to illustrate the strength and direction of the connection between the variables – the enterprise size, the level of business operations, the length of business operations and the business activity with the factors – the product quality and the after-sales service, the product price with which it appears in a new market, financial investment, the education of the management/employees, the government support level and the image of the country of origin of the enterprise when penetrating foreign markets, important for them to conquer those markets. The methods used in this research study are the hypothetical-deductive, analytical-deductive, and comparative methods, the historical and statistical-descriptive methods, and the comparative statistics methods (the ch2 test, ANOVA).

Keywords: *Enterprise, New markets, criteria, Strategy, Business success*

1. INTRODUCTION

The dynamism of market events is one of the specificities of today's business operations. Dynamism is determined by changes (www.promena) in a market, first of all technological and other numerous processes. The market is changing quickly. Consumers are becoming ever more sensitive to the quality of products and their prices. New distribution channels are emerging, as well as new communication forms. The influence of technological changes on business operations is big, and changes in the telecommunications field pillar the speed of changes in the market. All that offers Serbian enterprises the possibility of expanding their business operations in different markets, foreign ones included, as well as the danger of more competitive products from other countries entering the domestic market. What awaits Serbian enterprises in the next period is also the use of disruptive innovativeness in business operations (Ljubičić, 2020) in order to compensate for the existing technologies and achieve competitive advantage. Conquering new markets is in function of ensuring the survival of the enterprise given the fact that the world is being faced with an increasing number of buyers who want innovations in consumption.

We are actually speaking about a new strategy of an enterprise dedicated to the manners in which they may penetrate markets new to them with novel products/services, which as a rule are offered in other target markets, rather than offering the existing sales and production program. Penetration to a new market should base on the research that will enable the enterprise to become familiar with the bases of that particular market (Miletić, 2018, pp. 17, 65) in order for that enterprise to run a successful penetration campaign. Without a sound strategy and an implementation plan, efforts to enter new markets no matter whether they may be domestic or foreign ones will probably not provide a timely success. Access will depend on the market environment and the manner in which the enterprise is positioning its product against the existing competition. As markets are ripening locally, domestic enterprises are looking outside so as to find more lucrative markets. These markets can be interstate markets or the markets of the country in the vicinity of which they have similarities with the Serbian market. Understanding and satisfying consumer needs and requests (Maričić, Đorđević, 2015) in a precisely defined target market is the starting point of the enterprises aspiring towards premium business performances. In such a market, the problem does only lie in the possibility of creating an appropriate offer (Krstić, Đukić, Popović, 2014), but also both in hyper-competition and in limited demand. Therefore, every national enterprise intending to broaden its business and market horizons (Olavarrieta, Friedmann, 2008) should have a clear concept of its corporate and market expansion. In order for an enterprise to successfully conquer a new market with its product (launching-a new-product), it should first understand the most frequent reasons for which products deteriorate (medium, 2018). That requires a complex market analysis before starting appearing in a market. A good point to start from is to understand the basic cause of failure which has many facets and is frequently unpredictable. It is difficult to explain all the reasons for product failure or for entering a new market. Some of the reasons are the uncomplete product branding process, an unclear quality (Miletić, Ćurčić, Simonović, 2020), a lack of communication, and so forth. This should also be added the fact that the development of technology in innovative product production (Spruijt, Demouge, Hogeschool, 2018) is under a strong influence of searching for the solutions with the smallest negative influence on the environment. An enterprise can only compete for its market share and its buyers' interest (Olavarrieta, Friedmann, 2008) if it is innovative in such a market. An enterprise's business success is directly correlated with the creation of an innovative business plan whose proposal is implicative of a comprehensive perception of every situation between a product/the target market/the form of business operations. The enterprise that wants to conquer a new market also needs an optimal marketing strategy (Miletić, Ćurčić, Miletić, 2019) for appearing in that market that should serve the product to offer it the best opportunity to succeed in that new market. For a business plan as a new market conquering map to be successful, there are also the other factors, apart from monitoring consumer demand and introducing innovative products, that exert an influence on the selection of target markets to appear in. Those factors synergically build the offer which will satisfy consumers in that particular market. We speak about the elements of a business plan (Morić, 2015, p. 12) as a financial investment made by an enterprise in conquering new markets, the significance of the product quality (Miletić, Ćurčić, Aničić, D, 2017) and the after-sales service, the determination of the product price level for entering a new market, the education of the management/employees in the process of the enterprise's entrance to a new market, the selection of partners for creating a policy on entering a new market, the level of the government support in the process of the enterprise's appearance in a foreign market, the significance of the country of origin on the occasion of entering foreign markets, and so on. Actually, the enterprises that enter new markets should be methodical and with clear sales goals. This is simultaneously also a precondition for a successful competitive appearance of Serbian enterprises (Miletić et al., 2013) in selected markets.

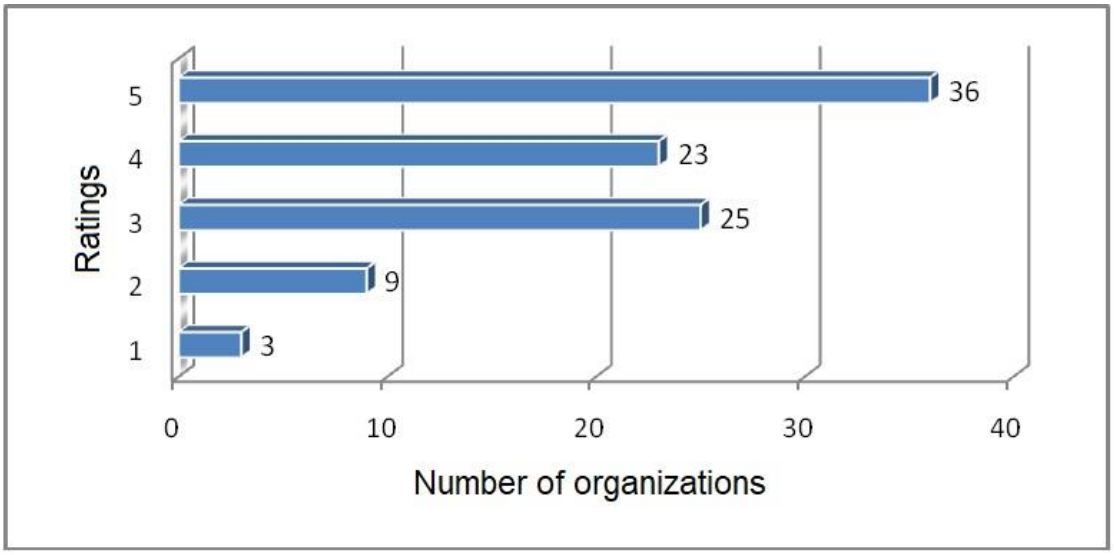
2. RESEARCH METHODOLOGY

The valuation of the elements important for conquering new markets by national enterprises was carried out as a cross-sectional study of an empirical character. The hypothesis of the research study is as follows: The enterprises planning to conquer new markets, international markets included, should be well prepared, make a selection of an adequate appearance concept, choose a well-designed market concept and a developed marketing program accompanying the enterprise's activity. Based on a specially adapted questionnaire, a sample of 96 Serbian enterprises were included in the survey, of which 42.7% were micro-firms, 25% accounted for small enterprises, 15.6% were medium-sized enterprises, whereas 16.7% were big enterprises. Of the sample enterprises included in the survey, 18.8% of them did business locally, 22.9% operated at a national level, 26% did business at a regional level, and 32.3% of the enterprises did business at an international level. The majority of the enterprises had been existing for over 15 years (38.5%), 31.3% of the firms had been operating from 8 to 15 years, 19.8% of them had been active from 4 to 7 years, whereas the smallest number of the enterprises had been doing business up to 3 years (19.4%). The service-based activities were performed by 61.5% of the enterprises, only to be followed the firms performing both service and manufacturing activities (22.9%), whereas the smallest ones were those mainly engaged in manufacturing activities (15.6%). The purpose of the questionnaire was to collect primary pieces of information from the respondents about the possibilities of conquering potential markets by national enterprises in the current business ambience. In fact, the assessment of the enterprises' business plans, the forecast for meeting buyer requirements, the significance of the marketing plan, the observation of the innovative capacities of the firms and the assessment of the support given by the government to the endeavor of the domestic enterprises to conquer different markets were the priority. The respondents rated the significance of Serbian enterprises' stepping into new markets by giving the ratings from 1 to 5, simultaneously valuing each factor in relation to the level of their respective significance (1 – the least important amongst the mentioned elements, 5 – the most important factor).

3. RESULTS AND DISCUSION

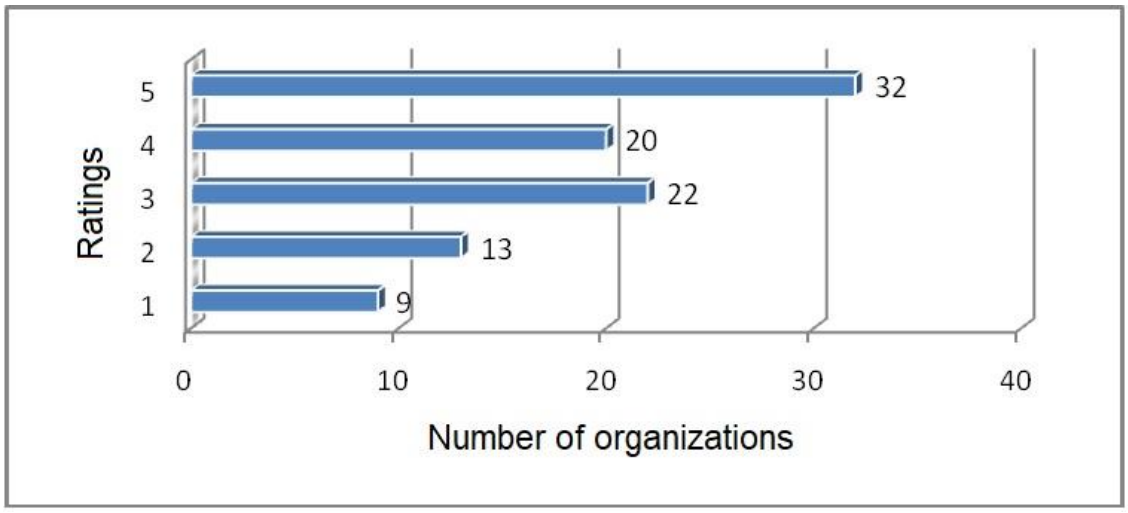
Analyzing the elements significant for the entrance of the domestic enterprises to a new market, a market niche or a foreign market unconquered yet, the research results account for the fact that an excellently devised business plan, as one of the selected factors, is given the highest rating 5.0 as per its importance by the respondents, i.e. in the highest percentage (37.5%); 24% of the sample enterprises gave it the rating 4; 26% of the enterprises gave it the rating 3; 9.4% of the enterprises gave it the rating 2, whereas the lowest rating 1 was given by 3.1% of the enterprises. The absolute values of the ratings for the importance of a well-designed business plan as a parameter important for enterprises to enter a new market are shown in Graph 1.

Graph following on the next page



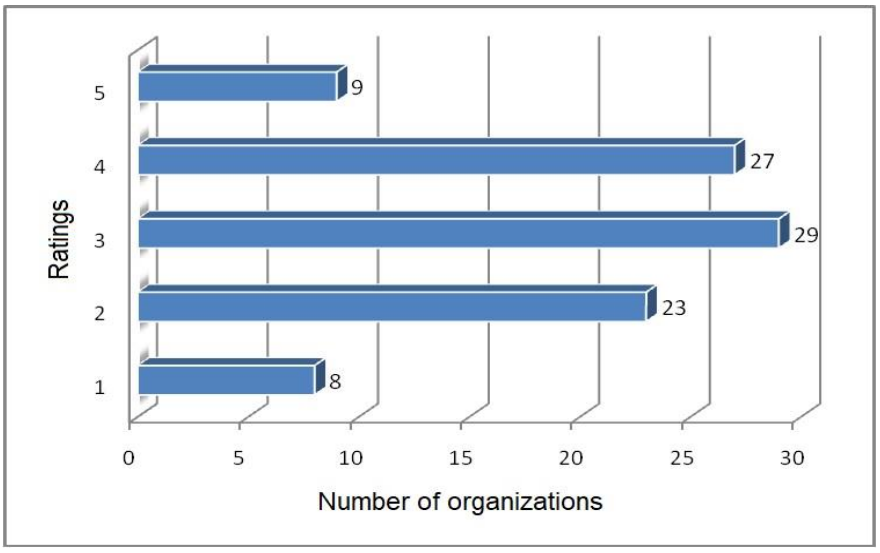
Graph 1: The absolute values of the ratings for a well-designed business plan as a factor significant for enterprises to enter a new market
(Source: Authors)

The outcomes of the research study show that the biggest percentage (33.3%) of the enterprises gave the highest rating 5 for tracking consumer demand and needs; 20.8% of the enterprises gave it the rating 4; 22.9% gave it the rating 3; 13.5% of the enterprises gave tracking consumer demand the rating 2, whereas the lowest rating 1 was given by 9.4% of the enterprises. Graph 2 shows the absolute values of the ratings given for tracking consumer demand as a factor significant for enterprises to enter a new market.



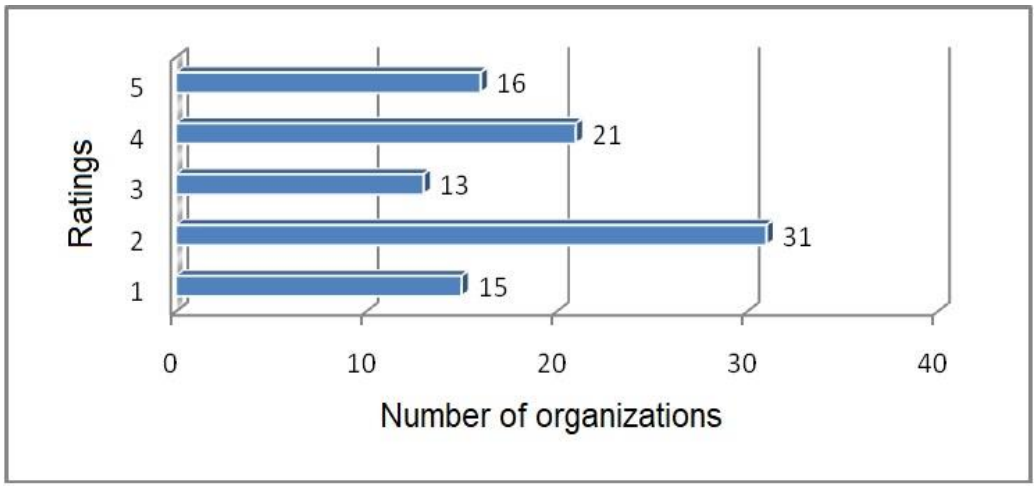
Graph 2: The absolute values of the ratings for tracking consumer demand as a factor significant for enterprises to enter a new market
(Source: Authors)

A quality marketing plan as a factor significant for their entering a new market was rated by the largest percentage of the enterprises (30.2%) with the rating 3; 28.1% of the enterprises rated it with the rating 4; 24% of the organizations gave it the rating 2; 9.4% of the enterprises gave it the highest rating 5, whereas the lowest rating 1 was given by 8.3% of the enterprises. The absolute values of the ratings of a serious marketing plan as the element significant for enterprises to enter a new market are presented in Graph 3.



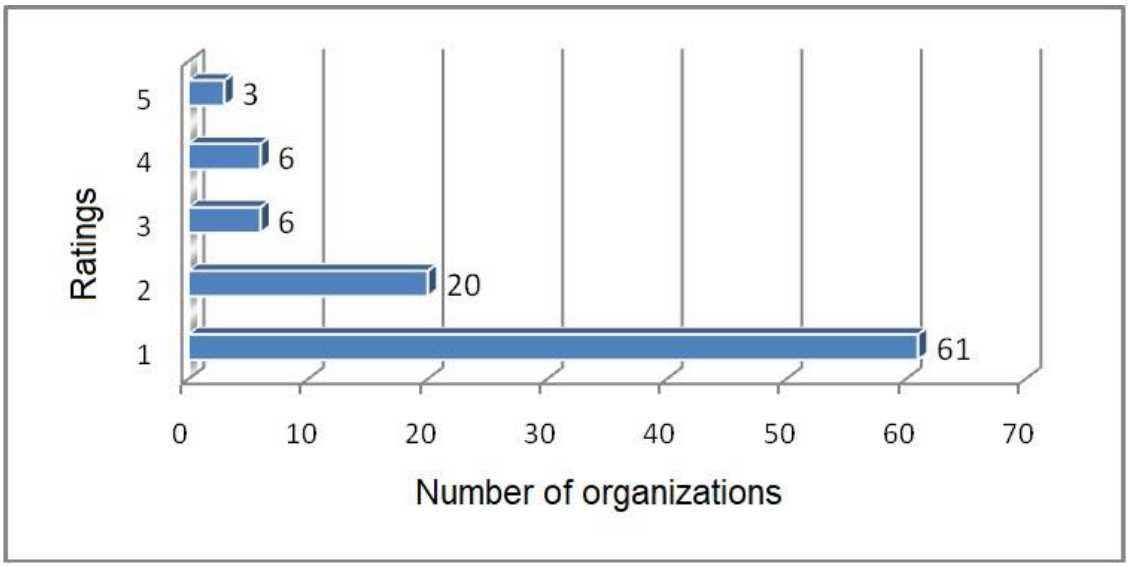
Graph 3: The absolute values of the ratings for a good marketing plan as a factor significant for enterprises to enter a new market
(Source: Authors)

The results show that the biggest percentage of the respondents see innovations as a factor significant for enterprises to enter a new market, which they rated with the rating 2; 21.9% of the organizations rated it with the rating 4; 16.7% of the enterprises gave it the rating 5; the lowest rating 1 was assigned to it by 15.6% of the organizations, whereas 13.5% of the organizations rated with the rating 3. Graph 4 shows the absolute values of the ratings for innovations as an element significant for enterprises to enter a new market.



Graph 4: The absolute values of the ratings for innovations as a factor significant for enterprises to enter a new market
(Source: Authors)

Based on the results obtained in the research study, it is noticeable that the government support as a factor significant for enterprises to enter a new market was rated in the biggest percentage by those enterprises with the lowest rating 1; 20.8% of the enterprises rated it with the rating 2; the same percentage of the organizations (6.3%) rated it with the ratings 3 and 4, whereas the highest rating 5 for the government support was given by 3.1% of the enterprises. Graph 5 shows the absolute values of the ratings for the government support as a factor significant for enterprises to enter a new market.



Graph 5: The absolute values of the ratings for the government support as a factor significant for enterprises to enter a new market
(Source: Authors)

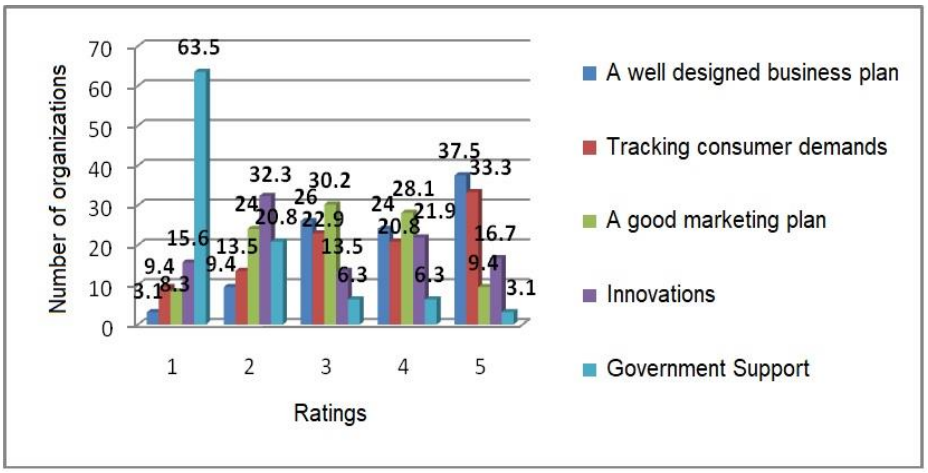
The mean values of the ratings for the factors significant for enterprises to enter a new market are presented in Table 1. The table shows that in order for enterprises to enter a new market, the most significant thing is for them to have a well-designed business plan (the mean value of the rating 3.79), which is followed by tracking consumer demand (the mean value being 3.57), then a good marketing plan, innovations, whereas the lowest rating was assigned to the government support, the mean value being 1.71.

	A well-though-out business plan	Tracking consumer demand	A good marketing plan	Innovations	Government support
Mean values	3.79	3.57	3.09	2.93	1.71

Table 1: The mean values of the ratings for the factors significant for enterprises to enter a new market
(Source: Authors)

The percentage share of the elements significant for enterprises to enter a new market is presented by Graph 6. It is noticeable that the government support was assessed with the convincingly lowest rating 1 (63.5% of the enterprises), whereas 37.5% of the organizations rated a well-though-out business plan with the highest rating 5, whereas 33.3% of the enterprises rated tracking consumer demand with the same rating.

Graph following on the next page



Graph 6: The percentage share of the factors significant for enterprises to enter a new market (Source: Authors)

The research study further requested that the respondents should make an assessment of the factors significant for enterprises to enter a new market, conquering new business niches and business operations internationalization, the lowest rating being 1, and the highest rating being 5. Table 2 below accounts for the significance of enterprises' stepping into a new market to their business success. The average rating for the significance of enterprises' stepping into a new market was 3.86. It is noticeable that the largest number of the organizations rated entrance to a new market with the ratings 4 and 5 (the average rating is close to 4), so it is possible to conclude that an enterprise's entering a new market is significant for its sustainable business success.

The significance of entering a new market for the organization's business success		
Ratings	Absolute frequencies – Af	Relative frequencies – Rf
1	4	4.1
2	2	2.0
3	28	29.1
4	33	34.5
5	29	30.3
Total:	96	100.0

Table 2: The ratings for the significance of the Serbian enterprises' entering new markets (Source: Authors)

3.1. Differences in the ratings for the factors significant for conquering new markets

The disproportions in the ratings for the factors significant for entering a new market are represented by the Chi-Square test ($\chi 2$) with the presence of the significance of the difference for the values Sig. (the relevance of the difference) ≤ 0.05. The strength of the connection between the variables was determined by Cramer's V indicator. The values of the strength of the connection of the variables are 0 – 0.1 (insignificant connectedness), 0.1 – 0.3 (small connectedness), 0.3 – 0.5 (medium connectedness) and V > 0.5 (great connectedness). Table 3 accounts for the disproportions in the ratings for the factors important for entering a new market in the case of the enterprises of a different size (micro-, small, medium-sized, and big). The significance of the factor for entering a special market niche or a foreign market (a well-designed business plan, tracking consumer demand, a good marketing plan, innovation and the government support) does not differ in the enterprises of a different size. Cramer's indicator is V=0.240, which is indicative of the small connectedness between the variables.

The size of the enterprise does not exert an influence on the differences in the ratings for the government support and innovations in business operations as the factors needed for entering a new market, given the fact that Sig>0.05 is for all the variables, accompanied by small connectedness between them.

Factors		Value	Df	Sig.	Cramer's V
Factors significant for entering a market	A well-designed business plan	16.636	12	0.164	0.240
	Tracking consumer demand	16.513	12	0.169	0.239
	A good marketing plan	15.060	12	0.238	0.229
	Innovations	19.492	12	0.077	0.260
	Government support	18.936	12	0.090	0.256

Table 3: The differences in the ratings for the factors significant for the enterprises of a different size to enter a new market
(Source: Authors)

The discrepancies in the ratings for the significance of the elements for conquering new markets in the enterprises operating at a different level (local, national, regional, international) are given in Table 4. Thus, the recommendation for tracking consumer demand as a factor significant for entering a new market importantly differs from one enterprise to another of a different business operations level Sig=0.001<0.05, with the medium strength of the connection between the variables V=0.344. As a parameter important for entering a new market, innovations in doing business do significantly differ as per relevance for the enterprises doing business at a different level Sig=0.025<0.05, with the small strength of the connectedness between the variables V=0.285. The rating for the government support as a factor significant for entering a new market is quite different in the case of the enterprises of a different business operations level Sig=0.024<0.05, a small strength of the connection between the variables V=0.286. The significance of a well-designed business plan does not differ to a great extent as per importance for entering an unconquered market by the enterprises doing business at a different level.

Factors		Value	Df	Sig.	Cramer's V
Factors significant for entering a market	A well-designed business plan	10.796	12	0.546	0.194
	Tracking consumer demand	34.167	12	0.001*	0.344
	A good marketing plan	13.613	12	0.326	0.217
	Innovations	23.351	12	0.025*	0.285
	Government support	23.515	12	0.024*	0.286

Table 4: The differences in the ratings for the factors significant for the enterprises of a different business operations level to enter a new market
(Source: Authors)

In Table 5, the differences in the ratings for the factors significant for entering a new market in the case of the enterprises with different lengths of business operations are presented. A disproportionate rating for the government support as a factor significant for entering new markets in the case of the enterprises doing business for a different period of time significantly singles out Sig=0.003<0.05, with the presence of the medium strength of the connection between the variables V=0.322. A well-designed business plan, a marketing plan, tracking consumer demand and innovations do not differ as per importance as the elements significant for entering a market in the case of the enterprises doing business for a different period of time.

Factors		Value	Df	Sig.	Cramer's V
Factors significant for entering a market	A well-designed business plan	19.413	12	0.079	0.260
	Tracking consumer demand	13.368	12	0.343	0.215
	A good marketing plan	9.083	12	0.696	0.178
	Innovations	19.664	12	0.074	0.261
	Government support	29.895	12	0.003*	0.322

Table 5: The differences in the ratings of the factors significant for the competitiveness and market share of the enterprises doing business for a different period of time (Source: Authors)

Table 6 shows the differences in the ratings for the factors important for entering a new market in the case of the enterprises performing different activities (service, manufacturing and both service and manufacturing). It can be concluded that, irrespective of the activity, there is no disproportion between the factors needed for conquering new markets, except for the government support. As a factor significant for entering a new market, the government support does importantly differ in the case of the enterprises performing different activities Sig=0.001<0.05, with the presence of the medium strength of the connection between the variables V=0.375. A well-designed business plan, tracking consumer demand and needs, a quality marketing plan and innovations do not differ as per significance for entering a market in the case of the enterprises performing different activities.

Factors		Value	Df	Sig.	Cramer's V
Factors significant for entering a market	A well-designed business plan	12.118	8	0.146	0.251
	Tracking consumer demand	3.409	8	0.906	0.133
	A good marketing plan	4.321	8	0.827	0.150
	Innovations	14.906	8	0.061	0.279
	Government support	27.060	8	0.001*	0.375

Table 6: The differences in the ratings for the factors significant for the competitiveness and market share of the enterprises performing different activities (Source: Authors)

3.2. Correlation analysis

The ultimate goal of correlation analysis is to describe the strength and direction of the connection between the variables (the enterprise size, the business operations level and the length of doing business with the factors significant for entering and conquering new markets and for acquiring and preserving competitive advantage). The Pearson correlation coefficients (r) may have the values from -1 to +1. The sign before the number shows whether the correlation is positive (both variables both decline and rise together) or negative (one variable declines when another rises, and vice versa). The absolute value of that coefficient (when the sign before the number is neglected) shows the strength of the connection, namely (Cohen, 1998): small correlation r=0.10 to 0.29; medium correlation r=0.30 to 0.49; big correlation r=0.50 to 1.0. The correlation of the elements significant for the enterprises to enter a new market (a well-designed business plan, tracking consumer demand, a good marketing plan, innovations, the government support) with the ratings for certain selected factors are accounted for in Table 7 below.

		A well-designed business plan	Satisfaction of consumer demand	A good marketing plan	Innovations	Government support
The significance of the quality of a product and the after-sales service for entering a new market	Pearson Correlation	-.164	.310(**)	-.234(*)	.063	-.050
	Sig. (2-tailed)	.111	.002	.022	.542	.629
	N	96	96	96	96	96
The significance of the product price for entering a new market	Pearson Correlation	.161	.074	-.210(*)	-.238(*)	.271(**)
	Sig. (2-tailed)	.117	.472	.040	.019	.007
	N	96	96	96	96	96
Financial investment in enterprises in conquering new markets	Pearson Correlation	.019	.028	-.286(**)	-.020	.269(**)
	Sig. (2-tailed)	.855	.790	.005	.850	.008
	N	96	96	96	96	96
Enterprises' marketing activities in penetrating to new markets	Pearson Correlation	.014	-.103	.039	.067	-.017
	Sig. (2-tailed)	.890	.318	.704	.518	.870
	N	96	96	96	96	96
The level of innovative activities in the enterprise that is conquering new markets	Pearson Correlation	.055	-.094	-.166	.232(*)	-.069
	Sig. (2-tailed)	.596	.363	.106	.023	.501
	N	96	96	96	96	96
The education of the management/ employees in the process of the enterprise's entering a new market	Pearson Correlation	.114	-.141	-.102	-.095	.275(**)
	Sig. (2-tailed)	.268	.169	.321	.358	.007
	N	96	96	96	96	96
The government support level in the procedure of an enterprise's entering a foreign market	Pearson Correlation	.063	-.231(*)	-.107	-.135	.501(**)
	Sig. (2-tailed)	.540	.024	.297	.190	.000
	N	96	96	96	96	96
The significance of the country of origin on the occasion of appearing in foreign markets	Pearson Correlation	.242(*)	.057	-.307(**)	.058	-.067
	Sig. (2-tailed)	.017	.583	.002	.573	.519
	N	96	96	96	96	96
Selecting (a) partner(s) in creating a policy on appearing in a new market	Pearson Correlation	.057	-.184	-.135	.145	.131
	Sig. (2-tailed)	.580	.072	.189	.157	.203
	N	96	96	96	96	96

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7: The correlation of the factors significant for enterprises to enter a new market and do business in a sustainable manner
(Source: Authors)

The research results show the existence of a positive correlation of a medium strength between the importance of the quality of a product and the after-sales service for entering a new market and tracking consumer demand (r=0.310). The results refer us to the attitude that an increase in the significance of the quality of a product and the after-sales service leads to an increase in the importance of tracking consumer demand as a meaningful factor for an enterprise's appearance in a new market. There is also a positive correlation of a small strength between the potential of the price for entering a new market and the government support (r=0.271). The results refer us to a conclusion that an increase in the significance of the price for the competitiveness of a product/service leads to the augmentation of the sense of the government support for an organization's entering a new market. There is a negative correlation of a small strength between the financial investment made by an enterprise in its conquering new markets and a quality marketing plan (r=-0.286), and a positive correlation of a small strength between financial investment and the government support (r=0.269). Based on the results, it can be seen that an increase in financial investments in conquering new markets reduces the significance of a marketing plan, but increases the significance of the government support on the occasion of an enterprise's entering a new market. There is also a positive correlation of a small strength between the education of the management/employees of an enterprise in the process of conquering new markets by the enterprises in achieving product competitiveness and the government support (r=0.275). The results refer us to the fact that an increase in the education of the management/employees increases the significance of the government support as an important factor for some enterprises to enter a new market. There is also a positive correlation of a big strength between the government support level in the procedure of an enterprise's entering a foreign market and the government support (r=0.501). The results refer us to a conclusion that an increase in the government support level in the competitiveness of the products placed in foreign (new) markets by national enterprises increases the significance of the government support as a factor important for them to enter target market. A negative correlation of a medium strength is present between the significance of the country of origin when an enterprise starts appearing in foreign markets and a good marketing plan (r=- 0.307). The results refer us to a conclusion that an increase in the significance of the country of origin reduces the importance of a good marketing plan as a meaningful factor for an enterprise's entering a new market.

4. CONCLUSION

The successful appearance of Serbian enterprises in new markets is brought into connection with their clearly detected goals and resource capacities to respond to those tasks. When entering new markets is in question in this study, numerous parameters were being valued. The research results have confirmed the hypothesis that the national enterprises planning to appear in new markets, international ones included, should prepare themselves thoroughly, select an adequate entrance concept, a well though-out market concept and a developed marketing program accompanying the activities performed by the enterprise. The outcomes of the conducted research study presented through the assessment of the elements important for Serbian enterprises to successfully appear in new markets show that the respondents rated the importance of a well-designed business plan with the highest rating 5.0 (i.e. they rated it in the highest percentage (37.5%)); 24% of the sample enterprises rated it with the rating 4; 26% of the enterprises rated it with the rating 3; 9.4% of the enterprises gave it the rating 2, whereas the lowest rating 1 was given by 3.1% of the enterprises. The mean value (MV) of the ratings of the factors significant for Serbian enterprises to enter a new market is 3.83. The results further show that tracking consumer demand as a factor important for entering a new market importantly differs in the enterprises of a different business operations level Sig=0.001<0.05, with the medium strength of the connection between the variables V=0.344.

As a parameter important for entering a new market, innovations in doing business significantly differ as per relevance for the enterprises doing business at a different level Sig=0.025<0.05, with the small strength of connectedness between the variables V=0.285. The rating for the government support as a factor significant for entering a new market is quite different in the case of the enterprises of a different business operations level Sig=0.024<0.05, with a small strength of the connection between the variables V=0.286. The disproportionate rating for the government support as a factor significant for entering new markets in the case of the enterprises doing business for a different period of time also singles out, Sig=0.003<0.05, with the presence of the medium strength of the connection between the variables V=0.322. The government support as a factor significant for entering a new market importantly differs in the case of the enterprises performing different activities Sig=0.001<0.05, with the medium strength of the connection between the variables V=0.375. The research results show the presence of a positive correlation of a medium strength between the importance of the quality of a product and the after-sales service for entering a new market and tracking consumer demand (r=0.310). The results refer us to the attitude that an increase in the significance of the quality of a product and the after-sales service increases the importance of tracking consumer demand as a meaningful factor for an enterprise's entering a new market. There is also a positive correlation of a small strength between the price potential for entering a new market and the government support (r=0.271). There is a negative correlation of a small strength between the enterprise's financial investment in conquering new markets and a quality marketing plan (r=-0.286) and a positive correlation of a small strength between financial investment and the government support (r=0.269). There is also a positive correlation of a small strength between the education of the management/employees in the process of conquering new markets by enterprises in their achieving the competitiveness of a product and the government support (r=0.275). There is also a positive correlation of a big strength between the government support levels in the process of the enterprise's entering a foreign market and the government support (r=0.501). It can be concluded that an increase in the government support level in the competitiveness of the product(s) placed by national enterprises in foreign (new) markets increases the significance of the government support as a factor important for conquering them.

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LITERATURE:

1. Ćurčić, N. (2018). *Business success of a modern organization,* The Institute of Agricultural Economics, Belgrade.
2. Cohen, J. (1998). *Statistical power analysis for the behavioral sciences,* New York, Lawrence Erlbaum Associates.
3. Krstić, G., Đukić, S., Popović, A. (2014). Vrednovanje marke kao ključne intelektualne imovine iz perspektive potrošača. *Marketing*, Vol. 5, Iss. 1, str. 14-28.
4. Ljubičić, I. (2020). Inovacije kao faktor razvoja preduzetništva sa naglaskom na Izrael i disruptivne inovacije. *Ekonomija - teorija i praksa*. No 3, str. 91-108.
5. Miletić, S. (2018). *Istraživanje tržišta.* Ekonomski fakultet Kosovska Mitrovica
6. Miletić, V., Ćurčić, N., Aničić, D. (2017). *Quality of Serbia products - sustainable competitiveness key on open market*. XV International multidisciplinary scientific conference "Eurobrand", 24-26 November, TQM Center & „Inventive center" Zrenjanin, e-Proceeding, p. 73-85.

7. Miletić, V., Ćurčić, N., Simonović, Z. (2020). Quality Standardization - A Factor of Sustainable Competitiveness of Enterprises in Serbia. *Anali Ekonomskog fakulteta u Subotici*, UDC: 658:005.6 339.137.2 DOI: 10.5937/AnEkSub2044099M Vol. 56, No. 44, pp. 099-114.
8. Miletić, V., Jovović., D., Miletić, S. (2013). Improvement strategy competitiveness of enterprises, *Ekonomika,* vol. 56, br. 4, p. 165-172.
9. Miletić, V., Ćurčić, N., Miletić, S. (2019). Ocene ključnih faktora unapređenja poslovanja i marketing koncepta u domaćim organizacijama. *Vojno delo,* br. 2, str. 289-304
10. Morić, M. (2015): *Biznis plan kao instrument uspešnog planiranja i poslovanja preduzeća*, Univerzitet Singidunum
11. Maričić, B., Đorđević, A. (2015). *Kreiranje i isporučivanje vrednosti potrošačima*, Ekonomski fakultet Beograd, str. 142.
12. Olavarrieta, S., Friedmann, R. (2008). *Market Orientation*, Knowledge - *related Resources and Firm Performance*, Journal of Business Research 61, p. 623-630
13. Spruijt, J., Demouge, K., Hogeschool, A. (2018). *Business Innovation: a framework for systematically creating sustainable value through entrepreneurship*. Academy of Entrepreneurship, Marketing and Innovation, Avans University of Applied Sciences,
14. https://medium.com/startup-autopsies/why-startups-fail-a-data-analysis-by-autopsy-a4bf60e482da
15. www.icthub.rs/promena-je-neizbezna-za-sve-kompanije-a-za-uspeh-se-bori-svaka-za-sebe/
16. https://marketingmreza.rs/da-li-se-u-srbiji-isplati-lansiranje-novog-proizvoda/

ACHIEVING SUPERIOR PERFORMANCE: THE IMPORTANCE OF INDUSTRY STRUCTURE

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ABSTRACT

This paper aims to explore relationship between industry and firms' performance. Industry structure is described through five competitive forces that, as theory states, define industry's profitability. However, although choosing profitable industry is important, it should not be crucial for firm's success. In this paper, external theories of firm's performance will be analysed and the importance of industry for firm's performance will be examined. The questionnaire is sent to CEO's of Croatian large firms that are identified based on the data from Croatian Chamber of Economy. A total of 87 usable completed surveys are collected, which resulted in the response rate of 19%. There are questions describing competitive rivalry, power of substitutes, threat of the new entry, power of suppliers and power of buyers. Performance is analysed through five elements: sales, sales growth, profitability, market share, market share growth and sustainability of achieved performance. Hypotheses are tested using SPSS 17.0. The results have shown that relationship between industry and performance exits, but that industry is not major factor that is responsible for firm's success.

Keywords: *competitive forces, five forces model, industry structure, performance*

1. INTRODUCTION

According to Porter (1991), firms must focus their activities on external environment through better anticipation, oversight, evaluation, and involvement in the strategic decision-making process. There are different theories within the field of strategic management that aim to explain the impact of industry on forms' profitability and competitive advantage. Neoclassical theory sees firm as entity that transforms inputs into outputs with the aim of profit maximization (Grimm, Lee, Smith, 2006). According to the assumptions of perfect competition theory there is a large number of companies that sell a homogeneous product and a large number of perfectly informed customers. Under these conditions, a single market that is based on supply and demand is determined. In perfect competition, there are no entry barriers or other market imperfections. Businesses strive to make a profit by equating marginal revenue with marginal cost. When companies operate in conditions of perfect competition, the only role of the strategy is to try to avoid unattractive markets. However, the model of perfect competition has important implications for the strength of individual competitive forces in neutralizing extra profits and exit of inefficient firms from the market, especially in the absence of product diversification or entry barriers. In the basic model of monopoly, there is only one firm operating in the market that, since it is aware of the price that each potential buyer is willing to pay for its product, has

the ability to determine the price in order to maximize its profits. In the basic model of monopoly, there are strong entry barriers based on which firms seek to maintain monopolistic extra-profits. However, there are variations of the basic model in which several companies operate in the market, with the dominant firm determining market conditions and price. Such models offer significant implications for shaping the strategy of the dominant firm. The theory of monopolistic competition, as a variant of the theory of perfect competition that allows differentiation, assumes that firms maximize their profits by equating marginal costs with marginal revenues. However, successful differentiation allows them to make extra profits. Thus, differentiation, through patents, trademark and reputation, can be a source of competitive advantage, which is why this model assumes that strategy has a significant role. The oligopoly market is characterized by a small number of companies whose actions are interdependent, therefore the models of oligopolistic markets also consider the way in which the firm reacts to the decisions of its competitors and to market opportunities. Oligopoly models have important implications for achieving competitive advantage because they provide insight into competitor analysis, strategy design, pricing strategy formation, and output quantity decision-making (Besanko, Dranove, Shanley, 2000). The industrial organization deals with organization, market and their interaction (Carlton, Perloff, 1999). On eof the most prominent concepts within industrial organization concept is S-C-P paradigm by Edward Mason, which describes the impact of industry structure on conduct, which in turn has impact on firm's performance (Lipczynski, Wilson, Goddard, 2005). Structure refers to the number of buyers and sellers within an industry, behaviour refers to the intensity of rivalry among companies within the industry, while performance refers to the aggregate profitability of individual companies measured at the industry level. The S-C-P paradigm focuses on factors that encourage rivalry, so it is very useful in understanding competition (Grimm, Lee, Smith, 2006). Bain and Mason, as founders of Harvard school of industrial organization, perceive that firm's behaviour and strategy is a certain industry, do not depend on management actions. However, this is not in line with the economic reality in which companies operating in the same industry differ according to the strategy they follow, managerial skills and profitability (Mahoney, Pandian, 1992, Spanos, Zaralis, Lioukas, 2004). Completely opposite form Harvard school, the Chicago school of industrial organization perceives that above-average returns are not always evidence of undesirable market power, but stem from superior efficiency (Langlois, 2003). According to the Chicago school, companies become large because of their efficiency and profitability, and should therefore not be penalized through government interference in the market (Lipczynski, Wilson, Goddard, 2005). The Chicago School partially takes over the elements of S-C-P paradigm, but it does not assumes its cause-and-effect relationships (Martin). Michael Porter and Richard Caves shifted the focus of the industrial organization to firm analysis and strategic groups, which proved to be extremely important for development of sustainable competitive advantage model. Industrial organization research provided insight into the ways of sustaining competitive advantage by positioning in the context of industrial structures through implementing appropriate strategies (Spanos, Zaralis, Lioukas, 2004). Porter's concept of five competing forces arose from the S-C-P paradigm of industrial organization (Grimm, Lee, Smith, 2006). According to this model, each industry has its own specific structure that is defined by the power of five competitive forces (Porter, 1979). The competitive forces are: buyers, suppliers, new entrants, substitutes and competitors. The weaker the competitive forces, the greater the ability of the firm to achieve superior performance. However, regardless of the collective strength of competing forces, the goal of the strategy is to position firms within the industry in such a way that it can fight competing forces or influence them to its advantage (Porter, 1979). The five forces model will be explored in the next chapter. Porter's five forces model is often criticized for neglecting competitive interaction among firms, which are explained by game theory.

Game theory attempts to understand and predict market behaviour (Kreps, 1990), while taking into account that firm's decisions depend on the actual and expected competitor's decisions (Grant, 2002). Game theory, through the analysis of interdependence, especially helps in understanding decision-making in oligopolistic conditions (Lipczynski, Wilson, Goddard, 2005). Action and market processes are key elements of the Austrian school of competitive advantage. Schumpeter, as one of the most important representatives of this school, believes that companies can achieve a competitive advantage through entrepreneurial discoveries and innovative competitive action. In this school equilibrium concepts are abandoned (Grimm, Lee, Smith, 2006). The following predictions of Schumpeter's theory are crucial for strategic management: companies are less able to maintain a strategic advantage over their competitors, such behaviour characterizes all industries, and sustainable competitive advantage is no longer a matter of finding and maintaining a competitive advantage, but a series of competitive advantages over time that together constitute a sustainable competitive advantage (Wiggins and Ruefli, 2005). According to evolutionary economics, innovation and technological change are factors influencing constant environmental changes (Grimm, Lee, Smith, 2006), where companies go through a rough process of natural selection that teaches them how to adapt to the environment (Wiggins, Ruelfi, 2005). Routines that manage the short-term behaviour of companies are called operating characteristics and point out that there are also routines that modify operating characteristics (Wiggins, Ruelfi, 2005). In order to describe the structure of the industry, the five forces model is used. Therefore, in the next chapter, five forces model is explained and hypotheses are proposed. After that, research methodology is described and the results of the empirical analysis are elaborated. Last chapter summarizes conclusions, limitations and the possible future research.

2. THEORY AND HYPOTHESES

The choice of a firm's competitive strategy depends on the attractiveness of the industry and five competing forces (Porter, 1985) determine the relative competitive position of the firm within the industry, and in that context the attractiveness of an industry. Porter, unlike IO, does not view the structure of the industry as completely exogenous and stable. He believes the industry is partly exogenous and partly influenced by firm actions. Porter believes that competitive advantage does not have to come from the firm, but that the real source of competitive advantage comes from the environment in which the firm operates (Porter, 1991). The action of competitive forces affects the strategic behaviour of the firm, which can primarily affect the entry or exit from the industry. If the five competing forces are linked to the S-C-P paradigm, it can be concluded that the collective strength of the five competing forces, ie the industrial structure, through the impact on prices, costs and required investments, determines the average profitability of industry (Porter, 1985). If there are only a few large buyers in the market, this will result in a situation where buyers take the lead and they dictate the terms of the sale. Also, if firms do not differ in the products and conditions they offer, or if a particular product forms an important part of the buyer's product, the buyer can contact other bidders and take the lead. The bargaining power of the buyers can be increased through backward integration (Porter, 2008). Based on all previously said, the following hypothesis can be proposed:

- H1. In industries with high buyer power, the firms will achieve lower levels of performance. The bargaining power of suppliers can be manifested by raising prices or reducing the quality of products and services. Similarly, buyers may lower prices or demand higher quality. The bargaining power of suppliers and buyers depends on the characteristics of the current market situation and on the relative importance of their sale or purchase. Consumers are price sensitive when they buy a product that is undifferentiated, expensive in relation to their income, and whose quality is not particularly important (Porter, 1979).

The choice of suppliers and target buyers is a key strategic decision of the firm by which it can improve its strategic position. The most common situation is that the firm can choose to whom it sells, or choose its buyers. Namely, buyers rarely have equal power. As a rule, a firm can sell its products to powerful buyers and continue to make above-average profits only if it has extremely low costs, or if its product is characterized by unique characteristics (Porter, 1979). So, it can be said that:

- H2. In industries with high supplier power, the firms will achieve lower levels of performance.

  In perfect competition, where entry barriers are low or where industry is easy to enter, long-term profits are low. Where entry barriers are high, long-term profits are higher. Entry and exit barriers affect the number of new competitors in the industry (Porter, 1979). The decision to enter the industry is also influenced by the expectations of potential competitors about the reaction of existing firms. Potential competitors will change their minds if existing firms have previously made it difficult for other firms to enter or if firms within the industry possess significant resources that they can use to fight new firms, industry firms are likely to lower prices in order to maintain market share. In addition, if the industry is characterized by slow growth, it will affect the ability to absorb new inputs and decline the financial performance of all firms involved (Porter, 1979), which means that:
- H3. In industries with high threat of new entrants, the firms will achieve lower levels of performance.

  Substitutes can limit the potential of an industry through the impact on the maximum price of a product. If firms within the industry cannot differentiate their product, substitutes will affect the decline in revenue and reduce the growth of the industry. Therefore, the biggest threat exists from substitutes who have improved their price-performance ratio relative to industry products, or those who are products of a highly profitable industry. The emergence of substitutes is most often sudden, and occurs if an increase in competition in their industry causes a drop in prices or an increase in performance (Porter, 1979), so:
- H4. In industries with high threat of substitutes, the firms will achieve lower levels of performance.

  Competition among firms within the industry becomes intense if there are a large number of competitors of similar size and power, or if industry growth is slow and firms are struggling to increase market share. In addition, in situations when the product is not differentiated, or the costs of switching to another product are not high there is also high threat from rivalry. High fixed costs and high exit barriers trigger high competition within the industry, since exiting is difficult. Based on all previously elaborated H5 can be presented:
- H5. The firms will achieve lower levels of performance in industries in which there is intense threat from rivals.

  As the industry matures, its growth rate changes, resulting in declining profits. The firm must adapt to some of these factors, but it is important to be aware that firm can influence and change some of these factors.

3. METHODOLOGY

Data is collected using questionnaire that is sent to CEO's of Croatian large and medium sized companies (the ones with more than 100 employees). The survey is conducted in May and June 2019, and there are 87 usable responses. The power of buyers is operationalized according to Homburg, Krohmar and Workman (1999), Deesarbo (2005), Wu (2006) and Pecotich, Hattie and Low (1999) with: bargaining power of buyers, rate of changes in buyer preferences, expectations of buyers preferences change and difficulty of satisfying changed buyers preferences.

Power of suppliers is operationalized according to Pecotich, Hattie and Low (1999) with the impact of the supplier's product on observed firm's product quality, supplier's ability to raise the price of their products, supplier's ability to reduce the quality of their products and general bargaining power of suppliers. The threat of new entrants is operationalized using the level of entry barriers, cost advantage of new firms, their investment in R&D and their investment in advertising (Pecotich, Hattie, Low, 1999). The power of substitutes is measured through substitutability of firm's product, availability of substitutes and the intensity of substitute threat (Pecotich, 1999). Competitors are operationalized according to Pecotich, Hattie and Low (1999), with addition of Newbert (2008), Wu (2006) and Miller (1987) using following elements: efforts made by competitors to maintain and increase market share, the impact of competitor's actions on analysed firm, competitor's resources, and unpredictability of competitor's actions. Performance is measured in accordance with Homburg, Krohmar and Workman (1999) and Newbert (2008) through manager's perception of sales, sales growth, profitability, market share, market share growth and sustainability of achieved performance. All questions are formed on 1-5 scale. The analysis is conducted using SPSS Statistics.

4. RESULTS

The largest part of companies from the sample (38%) is operating in only one industry. Other 36% of companies has one main and few other, less important business activities in different industries, 22% of them has multiple business activities that are equally important and related to each other, while only 4% of companies has multiple business activities that are equally important but unrelated to each other. Regarding the number of competitors, 1% of respondents has only one competitor, 2% has from one to 15 competitors, 7% has answered that they have no competitors. 18% companies in the sample have more than 16 competitors, 28% with 6-9 competitors and 44% with 2 to 5 competitors. When asked which type of business strategy they implement, 30% of respondents have chosen differentiation strategy, 29% of them implements cost leadership strategy, while 25% is stuck-in-the-middle. 26% of firms is operating in a narrow market segment, i.e. pursuing focus strategy. In Table 1 measurement scales reliability is presented.

	Buyers	Suppliers	New entrants	Substitutes	Competitors	Technology
Cronbach's Alpha	0.754	0.879	0.480	0.901	0.753	0.842

Table 1: Cronbach's Alpha
(Source: Authors)

According to Cronbach's Alpha, substitutes have excellent reliability, suppliers and technology scales have very good reliability, while buyers and competitors have acceptable reliability. The reliability of new entrants scale is slightly below desirable level of 0.5. In order to test proposed hypotheses, Sperman's rho correlation is used. In Table 2 correlation coefficients between the power of buyers in an industry and firm's performance is conducted.

		Sales	Sales growth	Profitability	Market share	Market share growth	Performance sustainability
Spearman's rho	BUY 1	-,180	-,059	-,293**	-,040	-,107	-,097
	BUY 2	,047	,095	-,016	,042	,087	,013
	BUY 3	-,001	,062	-,059	,014	,039	-,163
	BUY 4	-,014	-,009	,006	,007	-,083	-,277**

*-Correlation is significant at the 0.05 level (2-tailed)
**-Correlation is significant at the 0.01 level (2-tailed)

Table 2: Correlation between buyer power and performance
(Source: Authors)

From Table 2 it can be seen that there is statistically significant negative correlation between bargaining power of buyers and profitability (-0.293), as well as difficulty of satisfying changed buyers preferences and performance sustainability (-0.277). The intensity of correlation is moderate. When there is a high buyer power in an industry the profitability of analysed firm is lower. If firm is operating in an industry, in which it is extremely difficult to satisfy changes in buyer's preferences, that the possibility of sustaining performance levels will be lower. It can be concluded that H1 can be partially accepted.

		Sales	Sales growth	Profitability	Market share	Market share growth	Performance sustainability
Spearman's rho	SUPL 1	-,011	,142	-,081	,121	,009	-,119
	SUPL 2	-,233*	-,041	-,063	-,038	-,132	-,181
	SUPL 3	-,202	-,066	-,095	-,063	-,173	-,356**
	SUPL 4	-,149	-,007	,014	,004	-,108	-,204

*-Correlation is significant at the 0.05 level (2-tailed)
**-Correlation is significant at the 0.01 level (2-tailed)
Table 3: Correlation between supplier power and performance
(Source: Authors)

There are two statistically significant correlation coefficients in this case, and they are negative, as predicted by the theory. Supplier's ability to raise the product price is negatively related to firm's sales (-0.233). The reason could stem from the fact that the raise of the input product's price often triggers the growth of firm's product price, and higher price could lead to lower sales. Supplier's ability to reduce the quality of their products is related to performance sustainability (-0.356), since lower quality of input products often leads to lower quality of firm's final product. When buyers become aware that product quality is worse than it was, in the long term, they will stop buying product and current levels of performance cannot be sustained. Based on all previously said, hypothesis H2 can be partially accepted.

		Sales	Sales growth	Profitability	Market share	Market share growth	Performance sustainability
Spearman's rho	ENT 1	,018	,107	,075	,012	,073	-,026
	ENT 2	-,116	-,004	-,144	-,033	-,067	-,165
	ENT 3	,204	,074	,004	,161	,175	,220*
	ENT 4	,218*	,233*	,156	,368**	,174	,191

*-Correlation is significant at the 0.05 level (2-tailed)
**-Correlation is significant at the 0.01 level (2-tailed)
Table 4: Correlation between the power of new entrants and performance
(Source: Authors)

The results from Table 4 show that only positive correlations are statistically significant. According to the results of correlation, analysis in industries where potential new entrants would have significant investments in R&D the performance sustainability of examined firms will be higher (0.220). In addition, there is positive and statistically significant correlation between sales, sales growth, market share of examined companies and the level of investment of new entrants into advertising. The resound could be industries that would attract new companies who are willing to have high investments in R&Da and advertising are probably attractive industries with high growth. However, this is not in accordance with proposed hypothesis and therefore hypothesis H3 cannot be accepted.

		Sales	Sales growth	Profitability	Market share	Market share growth	Performance sustainability
Spearman's rho	SUPS 1	-,144	-,124	-,141	-,153	-,271*	-,153
	SUPS 2	-,119	-,069	-,101	-,108	-,234*	-,173
	SUPS 3	-,112	-,095	-,207	-,057	-,182	-,183

*-Correlation is significant at the 0.05 level (2-tailed)
**-Correlation is significant at the 0.01 level (2-tailed)
Table 5: Correlation between the power substitutes and performance (Source: Authors)

From Table 5 it can be seen that each one of 18 tested correlations turned out to be negative, which is in accordance with proposed hypothesis and theory. The reason is if the products of the observed companies are easier to replace, the performance of the observed companies will decline. In addition, there is a statistically significant correlation between the increase in market share and through substitutability of firm's product (-0.271), as well as market share and the availability of substitutes (-0.234). This relationship is negative since if substitutes are easily available and the firm's products are easily interchangeable, the market share of observed firm could decline. According to these results, hypotheses H4 is partially accepted.

		Sales	Sales growth	Profitability	Market share	Market share growth	Performance sustainability
Spearman's rho	COM 1	-,013	-,070	-,045	,040	,009	-,088
	COM 2	-,070	-,016	-,008	-,076	-,162	-,114
	COM 3	-,136	-,091	-,095	-,115	-,132	-,158
	COM 4	-,025	,003	-,173	-,074	-,001	-,191

*-Correlation is significant at the 0.05 level (2-tailed)
**-Correlation is significant at the 0.01 level (2-tailed)
Table 6: Correlation between the power of rivals and performance (Source: Authors)

As predicted by theory, correlations between efforts made by competitors to maintain and increase market share, the impact of competitor's actions on analysed firm, competitor's resources, and unpredictability of competitor's actions with firm's profitability are negative. The reason is that it is more difficult to achieve high profitability when there is high intensity of competition in the industry. However, they are not statistically significant, so hypotheses H5 cannot be accepted.

5. CONCLUSION

The aim of this paper is to conduct empirical analysis of relationships proposed by Porter's five forces model. According to the results of the analysis, there is a negative relationship between some of the competitive forces, i.e. the power of buyers, the power of suppliers and the power of substitutes, and firm's performance, but it is quite low. According to these results, H1, H2 and H3 are partially accepted. When analysing the threat of new entrants, the results have shown that in industries where potential new entrants would have significant investments in R&D the performance sustainability of examined firms would be higher. In addition, when there is positive and statistically significant correlation between sales, sales growth, market share of examined companies and the level of investment of new entrants into advertising. This is not in accordance with theory, and the reason could be that industries who attract companies that are willing to have high investments in R&D and advertising are probably attractive industries with high growth. So, H4 is not accepted. On the other hand, there is no statistically significant relationship between the intensity of rivalry and form's performance, which is not in accordance with theoretical propositions, so H5 is not accepted.

The results presented in this article could be due to the fact that according to Rumelt (1991) firm-specific effects turn out to be more important for performance than industry effects. That was supported by other empirical studies (McGahan and Porter, 1997, Mauri, Michaels, 1998; Spanos, Zaralis, Lioukas, 2004, Hawawini, Subramanian and Verdin, 2005, McNamara, Aime, Vaaler, 2005, Gjerde, Knivsflå, Sættem, 2010). In addition, according to McGahan (1999) industry effects are important, stable and predictable. They explain around 1/3 variations in form's profitability. On the other hand, firm-specific factors are twice as important as industry effects, but they are less stable and less predictable. McGahan and Porter (1997) point out that by separating non-diversified firms from the sample, the estimated impact of the industry grows significantly. This could explain the results presented in this paper, since there are 38% of non-diversified firms in the sample. In addition, separating non-diversified firms from the sample could be one of the possible future studies. The forces are not independent of each other; increasing intensity of one force can affect changes in the action of another force (Grundy, 2006), so the futures studies could also analyse the interdependence between competitive forces. Limitation of this research are related to the questionnaire as instrument of collecting data, the fact that respondents are often biased. Also, the results could vary with respect to other national contexts, or, as theory proposes, could change by removing non-diversified companies from the sample.

LITERATURE:

1. Besanko, D., Dranove, D., Shanley, M. (2000). Economics of Strategy, John Wiley and Sons, New York
2. Carlton, D.W., Perloff, J.M. (1999). Modern Industrial Organization, Addison Wesley Longman, New York
3. Deesarbo, W.S., Di Benedetto, C.A., Song, M., Sinha, I. (2005). Revisiting the Miles and Snow Strategic Framework: Uncovering Interrelationships between Strategic Types, Capabilities, Environmental Uncertainty, and Firm Performance, Strategic Management Journal, 26, pp. 47-74.
4. Gjerde, Ø., Knivsflå, K., Sættem, F. (2010). Evidence on Competitive Advantage and Superior Stock Market Performance, Managerial and Decision Economics, 31, pp. 277-301.
5. Grant, R. M. (2002). Contemporary Strategy Analysis: Concepts, Techniques, Applications (Fourth Edition), Blackwell Publishers, Oxford
6. Grimm, C.M., Lee, H., Smith, K.G. (2006). Strategy as Action: Competitive Dynamics and Competitive Advantage, Oxford University Press, Oxford, 2006.
7. Grundy, T.: Rethinking and reinventing Michael Porter's five forces model, Strategic Change, 15, pp. 213-229.
8. Hawawini, G., Subramanian, V., Verdin, P. (2005). Is performance driven by industry- or firm-specific factors? A reply to McNamara, Aime and Vaaler, Strategic Management Journal, 26, pp. 1083-1086.
9. Homburg, C., Krohmer, H., Workman, J.P. (1999). Strategic Consensus and Performance: The Role of Strategy Type and Market-Related Dynamism, Strategic Management Journal, 20, pp. 339-357.
10. Kreps, D.M. (1990). Game Theory and Economic Modeling, Oxford University Press, New York
11. Langlois, R.N. (2003). Strategy as Economics versus Economics as Strategy, Managerial and Decision Economics, Special Issue: Integrating Management and Economic Perspectives on Corporate Strategy, 24 (4), pp. 283–290.
12. Lipczynski, J., Wilson, J., Goddard, J. (2005). Industrial Organization: Competition, Strategy, Policy (2nd edition), Prentice Hall, London

13. Mahoney, J.T., Pandian, R.J. (1992). The Resource-Based View Within the Conversation of Strategic Management, Strategic Management Journal, 13 (5), pp. 363-380.
14. Mauri, A.J., Michaels, M.P. (1998). Firm and industry effects within strategic management: An empirical examination, Strategic Management Journal, 19 (3), pp. 211-219.
15. McGahan, A.M., Porter, M.E. (1997). How much does industry matter, really?, Strategic Management Journal, 18, pp. 15-30.
16. McGahan, A.M. (1999). The performance of US corporations: 1981-1994, The Journal of Industrial Economics, 47, pp. 373-398.
17. McNamara, G., Aime, F., Vaaler, P.M. (2005). Is performance driven by industry- or firm-specific faktors? A response to Hawawini, Subramanian and Verdin, Strategic Management Journal, 26, pp. 1075-1081.
18. Miller, D. (1987). The Structural and Environmental Correlates of Business Strategy, Strategic Management Journal, 8 (1), 1987., str. 55-76.
19. Newbert, S.L.: Value, rareness, competitive advantage, and performance: A conceptual-level empirical investigation of the resource-based view of the firm, Strategic Management Journal, 29, pp. 745-768.
20. Pecotich, A., Hattie, J., Low, L.P. (1999). Developement of Industruct: A scale for the measurement of perceptions of industry structure, Marketing Letters, 10 (4), pp. 409-422.
21. Porter, M. (1985). Competitive advantage: Creating and sustaining superior performance, The Free Press
22. Porter, M.E. (1980). Competitive Strategy: Techniques for Analyzing Industries and Competitors, Free Press, New York
23. Porter, M.E. (1979). How Competitive Forces Shape Strategy, Harvard Business Review, March-April, pp. 1-10.
24. Porter, M.E. (1991). Towards a Dynamic Theory of Strategy, Strategic Management Journal, 12, Special Issue: Fundamental Research Issues in Strategy and Economics, pp. 95-117.
25. Rumelt, R. (1991). 'How mush does industry matter?', Strategic Management Journal, 12 (3), pp. 167-185.
26. Spanos, Y.E., Zaralis, G., Lioukas, S. (2004). Strategy and industry effects on profitability: evidence from Greece, Strategic Management Journal, 25, pp. 139-165.
27. Wiggins, R.R., Ruelfi, T.W. (2005) Schumpeter's ghost: Is hypercompetition making the best of time shorter?, Strategic Management Journal, 26, pp. 887-911.
28. Wu, L.Y. (2006). Resources, dynamic capabilities and performance in a dynamic environment: Perceptions in Taiwanese IT enterprises, Information & Management, 43, pp. 447-454.

DEVELOPMENT OF A SMART PARKING SYSTEM USING RASPBERRY PI

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ABSTRACT

The Internet has become an integral part of people's lives, more and more daily activities are being digitized and automated. So far, the Internet has been proposed for interaction between people. Internet of things (IoT) goes a step further and includes things to the Internet. The first section describes the historical development of IoT and explains the concept of IoT, the second one shows challenges of IoT which need to be resolved before the implementation of IoT. The third section elaborates on the IoT architecture from edge devices to Cloud computing. Then the application of IoT on a specific example such as a smart parking system is described in the fourth section, implementation needs are also specified, and implementation methods are outlined. Section 5 emphasizes the need to process the collected data and provides one way of data processing using contextualization.

Keywords: *Cloud, Contextualization, Edge devices, Internet of Things (IoT), Raspberry PI, Sensors, Smart parking system*

1. INTRODUCTION

The Internet was developed as a global network to connect people and it soon became an important part of everyday life. Now everything is digitalized, mobility and the availability of information have become a priority to people, especially in the business world where the most important thing is to know the right information at the right time. Internet of Things (IoT) goes one step further by connecting everything that is yet not connected to the Internet. A future global network will consist of people and intelligent objects that will be able to communicate and interact together. Intelligent objects will be able to collect data from the environment using sensors, make decisions based on collected data, and exchange data with other connected devices. Also, people will be able to manage intelligent devices remotely (Hanes, Salgueiro, Grossetete, Barton, Henry, 2017, pg. 42). The beginning of IoT is between 2008 and 2009 when the number of connected devices to the Internet outnumbered the number of people in the world but the concept of IoT was first mentioned by Kevin Ashton in 1999. He said that in the 20th century computers depended on humans, and by the 21st century, computers will get independent (Hanes, Salgueiro, Grossetete, Barton, Henry, 2017, pg. 43).

2. CHALLENGES FOR IOT

IoT represents the fourth phase of Internet development that will add intelligent devices to the existing network. The Internet as we know it today has been developed as a global network for connecting computers to exchange data using the TCP/IP protocol and it has its limitations. Connecting every device around us to the Internet, the network will become congested which leads to a decline in the quality of service. By reducing the data rate, the network becomes inefficient. Along with the exponential increase of connected devices to the Internet, the constant broadcasting of data by intelligent devices is also a problem. As an example, for the V2X (Vehicle to everything) use case, it is estimated that a vehicle will generate more than 25

gigabytes of data in one hour. Therefore, a system is required to effectively manage the collected data. IoT is not just about connecting things to the Internet, the main purpose is to effectively manage the collected data and make decisions based on them. IoT consists of numerous heterogeneous devices that collect data from the environment and exchange them on the Internet. The main characteristics of IoT devices are low memory capacity, limited processing capabilities, and low power consumption, which makes them very vulnerable to exploit. In addition, these devices are constantly unattended and mostly communicate via wireless technology. Exploiting IoT devices can have fatal consequences, so IoT must ensure privacy, confidentiality, and integrity of exchanged data. (Hanes, Salgueiro, Grossetete, Barton, Henry, 2017, pg. 64-66). Authentication and authorization of IoT devices are required to ensure secure communication of devices in the network. This means that each device needs to have a unique identifier. Also, every device must have an IP address in order to be connected to the Internet. So far, IPv4 has been used to assign IP addresses, which allows about 4.3 billion unique IP addresses. Adding things to the Internet requires changing to IPv6 that uses 128 bits instead of 32 to assign IP addresses. Therefore, before the full implementation of IoT, it is necessary to make some changes to the existing network.

3. ARCHITECTURE

The architecture of the Internet is designed in the 1970s and IoT brings many changes because the current network cannot handle that big increase in data traffic. Figure 1 shows the basic model of IoT architecture that can be divided into two main parts based on the functionality and these are core and data stack.

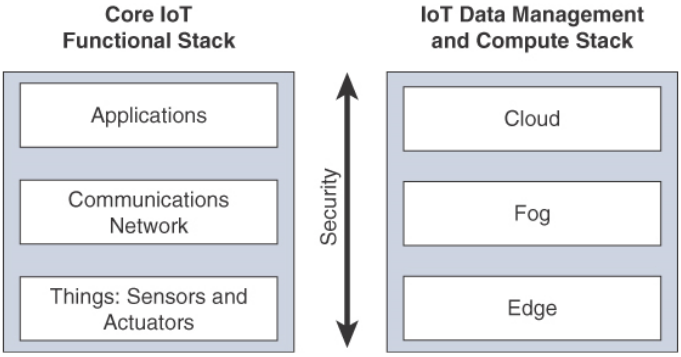


Figure 1: IoT architecture (Hanes, D., Salgueiro, G., Grossetete, P., Barton, R., Henry, J., 2017, p. 83)

3.1. Things (sensors), network, and applications layers

The whole IoT architecture is based on smart devices that collect data from the environment or another smart device and make decisions based on them. The first layer of IoT architecture is represented by sensors and other devices that collect data and pass it to the upper layers. Before implementing the sensor, it is necessary to think about the type, the amount of the data and how often the sensor will report. The second layer, i.e. network or transmission layer, receives data from sensors and passes it to the application layer. The important thing is to enable compatibility and data transfer between different devices and technologies. The application layer makes the value of IoT because it analyzes the data collected from previous layers. There are two types of applications, analytics and control, but most commonly used is a combination of both because of the complexity of the requirements. Analytical applications process the collected data from different IoT sources and present the results, which are most often statistical reports. In addition to analytical applications, control applications allow control over smart things (Hanes, Salgueiro, Grossetete, Barton, Henry, 2017, pg. 84-107).

3.2. IoT Data Management and Computer Stack

Upper layers of IoT are responsible for managing and storing data. Every day, sensors generate a huge amount of unstructured data that needs to be processed and stored. In some cases, the information from multiple different smart devices is needed, so the data have to be centralized prior to processing. The data can be centralized in the Cloud, but there is a problem of data volume, latency, and efficiency of data processing. For example, for V2X, it is important to gather all data around the vehicle and also process them in real-time, so latency should be as low as possible. Sending all data to the Cloud requires high network bandwidth, so that is where fog computing comes in. FaaS (Fog as a Service) has the same functionalities as Cloud, and those are data processing and storage services. The main difference is that the fog is a geographically widespread computing architecture which reduces latency when transmitting data. The closer the edge device is to the fog, the lower the latency. Figure 2 shows how to forward data from a Cloud to an edge device. All individual processing should be done closer to the edge of the network while processing based on the entire network, history data, and big data analysis should be done in the Cloud (Atlam, Walters, Wills, 2018, pg. 2-8) (Hanes, Salgueiro, Grossetete, Barton, Henry, 2017, pg. 107-115).

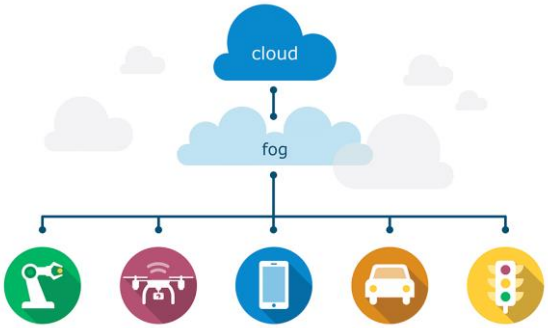


Figure 2: Hierarchical division of IoT data (https://www.mobiloitte.com/blog/wp-content/uploads/2018/02/IoT-Fog-Computing-2-Mobiloitte.png)

4. APPLICATION OF IOT: SMART PARKING SYSTEM

Today, most cities have significant problems with finding free parking spaces and traffic jams. The amount of cars has grown exponentially, so that the efficiency of commuting, such as going to work, becomes questionable. Also finding a free parking space becomes an impossible mission, it is estimated that the search for a parking space daily burns about one million barrels of oil, which is a share of 30% in total traffic (IMB, 2011) (Gupta, Kulkarni, Jathar, Sharma, Jain, 2017, pg. 113-119). Another survey shows that an average of 25% of total city travel time is spent searching for a parking spot, which is estimated at 8 minutes (Ávalos, Gómez, Guzmán, Ordóñez-Camacho, Román, Taipe, 2019, pg. 55-62). Global warming is a bigger problem, and according to NASA's GISS measurements since 1880, the earth's temperature has increased by 0.8 degrees, two-thirds of which occurred after 1975. (NASA*: NASA Earth observatory*, 2010). The cause is the increase in greenhouse gases in the atmosphere, and one of the most well-known is CO_2 caused by the combustion of fossil fuels. The transport system makes 30% of total CO_2 emissions, of which 72% is road transport (European Parliament News, 2019). These are some of the main reasons for the need to implement smart parking systems to improve the transport system. The main purpose of a smart parking system is to display free parking spaces in real-time on user's applications and to allow efficient management of parking spaces. In addition to the basic features, additional features improve the automation and efficiency of the parking system. Applying BI (Business Intelligence) over current and historical data enables strategic management of parking spaces.

For example, such a dynamic system allows for greater flexibility in pricing and thus can optimally regulate the parking system. Most articles highlight the need to reserve a parking space to prevent multiple drivers from coming to the same parking space (Teodorović, Lučić, 2006, pg.1666-1681). The system consists of sensors that collect data, the method of data collection may be different and depending on the situation. Considering the advantages and disadvantages of technologies, it is necessary to choose the most suitable one depending on the parking area.

4.1. Image processing

Most garages have video surveillance, which opens the possibility of implementing a smart parking system on existing infrastructure. Unlike sensors with limited capabilities, that can only detect if an object is in front or not, video processing can detect whether it is a car or another object with SIFT (Scale Invariant Feature Transform) technique. The advantage of such a system is that it can analyze a larger area at the same time and not just one parking space (Al-Kharusi, Al-Bahadly, 2014, pg. 55-65) (Kianpisheh, Mustaffa, Limtrairut, Keikhosrokian, 2012, pg. 51-58). The process of identifying occupied places consists of three steps:

1) First step: system initialization - taking a picture of an empty parking space and marking each parking space with unique tags
2) Second step: convert the images (initialization and current parking image) from the RGB (Red, Green, Blue) to a black and white binary image
3) Third step: comparing current parking image to initialization picture using the technique threshold comparisons, if there is an increase above the threshold the place is occupied

Figure 3 shows the result of image processing, green spaces represent vacant and red occupied parking spaces. Problems with this method of data collection are possible in open-air car parks, with the identification of lighter colors of cars in the bright sun or the reading of shadows as very dark cars, and weather conditions may impede the accuracy of the system (Kianpisheh, Mustaffa, Limtrairut, Keikhosrokian, 2012, pg. 51-58).

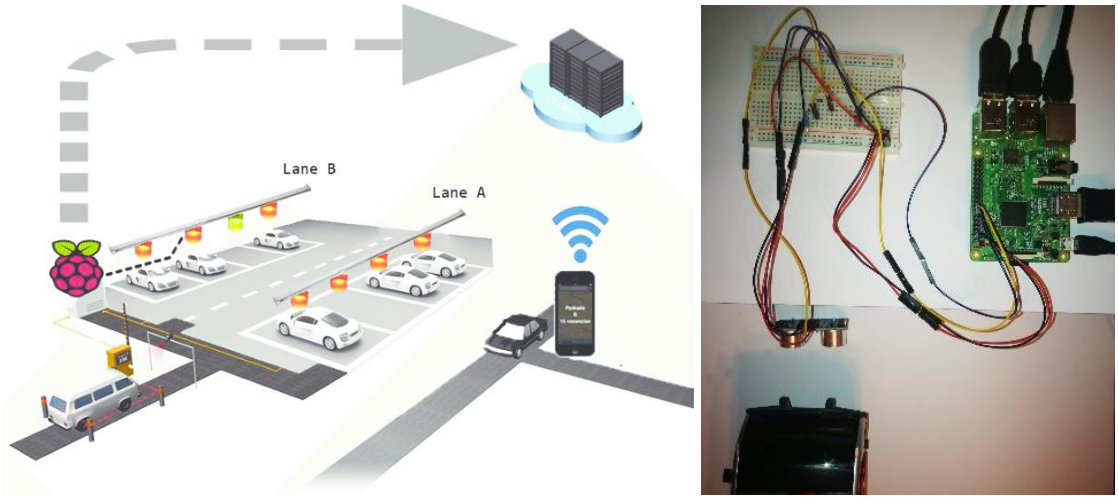
Figure 3: Smart parking system based on image processing (Acharya, Yan, Khoshelham, 2018, pg. 38)

4.2. Sensors

Another way to detect occupied places is with the help of sensors. Some garages have installed a sensor that counts car ins and outs, and based on that, they show the number of free parking spaces, but this is not enough, this information should constantly be available on applications to the drivers. Figure 4 shows how the sensor-based smart parking system works, above each parking space, there is a sensor and a light that signals if the parking place is free, busy or reserved. The information is sent to the Raspberry, which passes it to the Cloud.

To implement this simulation, we used:

- Hardware:
  - Raspberry Pi 3 (model B) – It is designed as a small computer with Raspbian operating system which is based on Debian and has over 35,000 packages and programs installed, such as Python that is used in this project. GPIO (General Purpose Input/Output) pins allow you to connect the Raspberry to other electronic components such as sensors (WatElectronics, 2019)(Raspbian, 2019).
  - HC-SR04 sensor - is a sensor that measures the distance from an object using ultrasonic waves. The sensor transmits high-frequency sound waves that cannot be heard by the human ear, which then bounce off the object to form a reflected wave. The sensor calculates the distance of the object by measuring the speed and time interval from broadcasting to receiving the reflected signal (Burnett, 2019.)
  - Resistors, jumpers, etc.
- Software:
  - Python and Dropbox (as Cloud) - Raspberry is the link between the sensor and the Cloud, and the scripts written in Python realize that. The script activates pins and sends a high-frequency signal of one nanosecond and measures the time between sending and receiving the signal. The distance is obtained from the multiplication of the interval and the speed of the ultrasonic signal (34300cm/s) divided by two. If the sensor is mounted on the ceiling, we can determine the approximate distance required for the parking space to be occupied. After that, the data is sent to the Cloud because Raspberry cannot process large amounts of data, while the Cloud has data for the entire network and not just for one garage.



a) *b)*

Figure 4: a) Smart parking system based on sensors (Khanna, Anand, 2016, pg. 268); b) Project realization

5. PROCESSING OF COLLECTED DATA

As mentioned above, the goal of IoT is not just to connect devices to the Internet, it is about collecting and sharing data among devices and making decisions based on them. Today, about 14 trillion or 0.06% of things are connected to the Internet, CISCO predicts it will increase to 50 billion by 2020 (Hanes, Salgueiro, Grossetete, Barton, Henry, 2017, pg. 108), which means that large amounts of unstructured data from different sources will be generated daily, these are also characteristics of Big Data.

The basic part of a smart parking system is that by location, the system reports where the free parking space is, but that is not enough to make drivers fully satisfied with the service because every driver has different needs and desires. The parking system is complex because various factors affect the amount of occupied parking space. Most often they are place and time, but it can also be affected by weather, holidays, events, days of the week, etc. In addition, each driver has own criteria that are important to him when choosing a place. Although there are standard sizes of parking spaces, deviations are always possible, so it is not enough to know if the parking space is vacant but it is necessary to consider the characteristics of the parking space and the vehicle. In conclusion, additional information such as driving experience and preferences, vehicle and parking characteristics and the location of the driver from the parking space should be considered. The amount of parking space is variable, so when there is more than one parking space available, drivers need to be able to choose a parking space according to their preferences. Currently, the best solution is contextualization, context is information about all entities relevant to the smart parking system. Applying contextualization reduces data complexity and speeds up decision making, and the process itself consists of:

1) Collecting data from users
2) Contextualization – information is first filtered by context and then aggregated. Aggregation is to merge multiple filters into one, creating a new context.

Figure 5 shows an example of a contextualization model, user data is filtered by location, driver's license, car type, and preferences. Filter aggregation creates a user context, such as the Melbourne location, which means that information about other non-eligible parking spaces will be excluded from processing. To implement such systems, contexts need to be stored in N-tuples that will describe data in the form <subject, predicate, object, id>. For example, <P01, is, occupied, 123> which means a parking space with tag P01 is occupied, 123 is a unique context identifier (Yavari, Jayaraman, Georgakopoulos, 2016, pg. 3). The University of Melbourne has done a simulation of such a system. They used actual parking data in Melbourne and generated data for 50,000 users. According to their research, the contextualization of IoT data for the smart parking system reduces query time by more than 3 times compared to standard mode, as shown in Figure 6 (Yavari, Jayaraman, Georgakopoulos, 2016, pg. 1-5). It should be emphasized that context-specific priorities should be implemented for the model, depending on the number of available parking spaces.

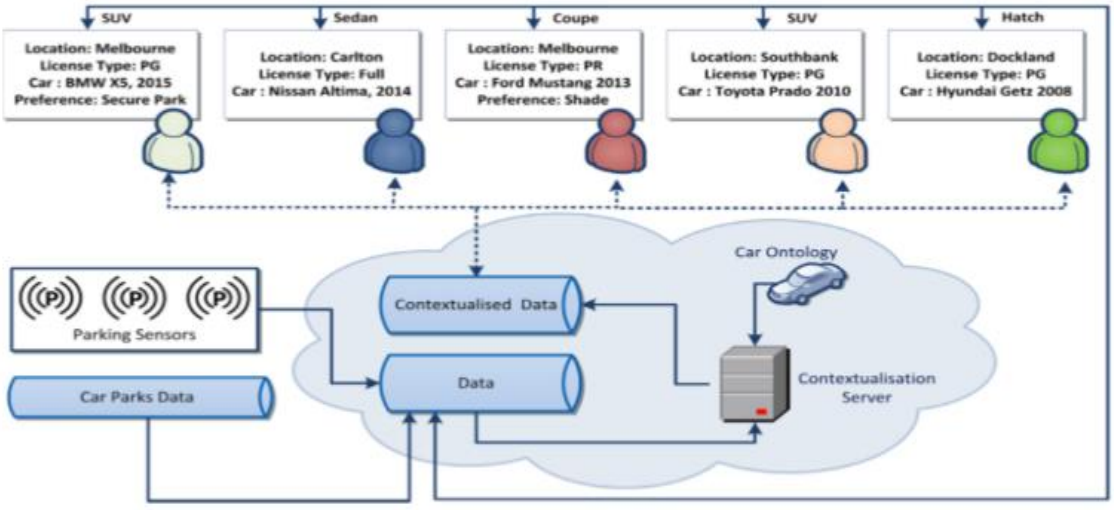


Figure 5: Contextualization (Yavari, Jayaraman, Georgakopoulos, 2016, pg. 2)

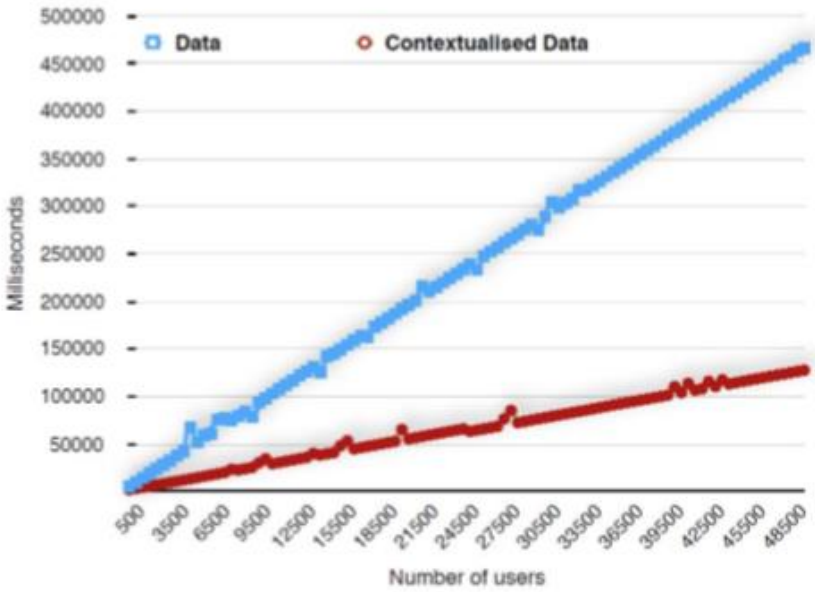


Figure 6: Contextualization query duration (Yavari, Jayaraman, Georgakopoulos, 2016, pg. 4)

6. CONCLUSION

IoT is based on smart devices that collect data from the environment and send it to higher layers for processing. Data centralization gives an overview of the entire network on which action decisions can be based. Due to the latency, part of the data processing takes place at the edge devices thus reducing network congestion. The application of IoT is exemplified by a smart parking system. The system will inform the users where the free parking space is located. In this example, it can be seen that it is not enough to inform users only about the free parking space, but other parameters such as vehicle dimensions, parking characteristics, driver preferences must also be taken into account. Contextualization has been proposed as a solution, which also significantly speeds up the query execution. Besides data processing, the emphasis is also placed on security. Most end devices are unattended and collect personal information about users that could be abused. From the work, it is evident that IoT is not a new technology but is based on existing technologies such as Cloud computing, Big Data, Business Intelligence. The synergy of all these technologies creates an independent smart network.

LITERATURE:

1. Hanes, D., Salgueiro, G., Grossetete, P., Barton, R., Henry, J. (2017): *IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things.* CISCO Press, ISBN:1587144565 9781587144561
2. Atlam, H., Walters, R., & Wills, G. (2018). *Fog Computing and the Internet of Things: A Review. Big Data and Cognitive Computing*, 10.
3. Aniket Gupta, Sujata Kulkarni, Vaibhavi Jathar, Ved Sharma, Naman Jain. (2017): *Smart Car Parking Management System Using IoT. American Journal of Science, Engineering and Technology.* Vol. 2, No. 4, pp. 112-119.
4. H. Ávalos, E. Gómez, D. Guzmán, D. Ordóñez-Camacho, J. Román, O. Taipe (2019): *Where to park? Architecture and implementation of an empty parking lot, automatic recognition system*
5. NASA*: NASA Earth observatory*, Retrieved 15.08.2019. from: https://earthobservatory.nasa.gov/world-of-change/DecadalTemp

6. European Parliament News: *CO2 emissions from cars: facts and figures (infographics) 22-03-2019*, Ref.: 20190313STO31218, Retrieved 04.08.2019. from http://www.europarl.europa.eu/news/en/headlines/society/20190313STO31218/co2-emissions-from-cars-facts-and-figures-infographics.
7. Teodorović, D., & Lučić, P. (2006). *Intelligent parking systems. European Journal of Operational Research*, 175(3), 1666–1681.
8. Al-Kharusi, H., & Al-Bahadly, I. (2014). *Intelligent Parking Management System Based on Image Processing*. World Journal of Engineering and Technology, 2014.
9. Kianpisheh, N. Mustaffa, P. Limtrairut, P. Keikhosrokian, (2012). *Smart Parking System (SPS) Architecture Using Ultrasonic Detector*. International Journal of Software Engineering and Its Applications Vol. 6, No. 3, July, 2012, 51-58
10. Kianpisheh, N. Mustaffa, P. Limtrairut, P. Keikhosrokian, 2012. Smart Parking System (SPS) Architecture Using Ultrasonic Detector. International Journal of Software Engineering and Its Applications Vol. 6, No. 3, July, 2012, 51-58
11. Acharya D., Yan W., Khoshelham K., 2018, Real-time image-based parking occupancy detection using deep learning, pg. 33-39
12. WatElectronics.com: Know all about Raspberry Pi Board Technology, July 26, 2019, Retrieved 15.08.2019. from https://www.watelectronics.com/know-all-about-raspberry-pi-board-technology/
13. Welcome to Raspbian, Retrieved 17.08.2019. from https://www.raspbian.org/
14. Burnett R., Understanding How Ultrasonic Sensors Work, 2019, https://www.maxbotix.com/articles/how-ultrasonic-sensors-work.htm
15. Yavari, A., Jayaraman, P. P., & Georgakopoulos, D. (2016). *Contextualised service delivery in the Internet of Things: Parking recommender for smart cities. 2016 IEEE 3rd World Forum on Internet of Things (WF-IoT).*
16. Khanna, A., Anand, R. (2016). IoT based smart parking system. 2016 International Conference on Internet of Things and Applications (IOTA) pg. 266-270

VOLUNTARY PENSION SAVING IN CEE COUNTRIES: POSSIBILITIES FOR ENHANCEMENT

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ABSTRACT

Voluntary pension saving, or the third pillar of the pension system in CEE countries, can be seen as an enhancement of pension benefits based on the two mandatory pillars of the pension system. In Croatia, less than 10% of citizens opt for this savings option, with the average amounts saved being very low and insufficient to ensure a significantly better standard of living in old age. Nevertheless, the performance of voluntary pension funds can be considered satisfactory and there are favourable government incentives and better tax treatment of pension saving compared to other forms of saving. Voluntary pension saving is the only financial product in the Republic of Croatia that includes state incentives, fund returns and tax relief for employers. Considering the low level of coverage and contributions within the voluntary pension pillar in Croatia, but also in other CEE countries, the question arises as to the possible reasons for the low interest of employees in this type of saving. This is due to low financial literacy, lack of long-term predictable and transparent government policies and other unfavourable economic and social factors. The aim of this article is to present effective tools to promote pension saving and achieve higher participation in voluntary pension schemes. Research findings suggest that, in addition to traditional tax incentives, there are some new, effective types of financial (non-tax) incentives that are better suited to low-income savers, who are in the minority in the overall population of voluntary pension savers. These efforts should continue in the coming years and have an impact on the general attitude towards money and saving and thus on the overall financial behaviour of citizens.

Keywords: *CEE countries, pension system, financial literacy, incentives, voluntary pension saving*

1. INTRODUCTION

Systematic pension reform in Croatia began with the 1998 Pension Insurance Act, which laid the foundation for the transition from the then exclusively public pay-as-you-go benefit system to the current mixed-pillar pension system. However, the expected results of this reform did not quite materialise as initially anticipated, leading to further interventions in 2002, 2015 and 2018. This underlines the ongoing need to improve pension systems in all EU countries after the transition, especially in those countries that reformed their pension systems by upgrading the existing pay-as-you-go (PAYG) model additional with two pillars consisted of mandatory and voluntary pension funds, especially in the late 1990s and early 2000s when they faced problems such as unfavourable demographic trends, huge financial pressures and public pension insolvency (Olgić Draženović, Hodžić, Maradin 2019).

Therefore, most of the Central and Eastern European (CEE) governments implemented a three-pillar pension reform based on the World Bank model during the first fifteen years of transition. But the outbreak of the global financial crisis triggered the second comprehensive wave of changes in the pension system. Most countries from CEE decided to modify the existing pension system, ranging from minor (or no) modifications to radical pension reforms of the institutional framework, regulation, and structure of old-age pension systems. The changes were more pronounced in the second pillar, reducing the amount of contributions paid into mandatory pension funds, changing the rules for fund participation, or even nationalizing the second pillar (Bielawska, Chłoń-Domińczak, Stańko, 2017; Olgić Draženović, Buterin, Suljić Nikolaj 2019). It can be concluded that the limited scope of contributory pension systems is a serious economic and social problem, and therefore one of the viable options for the future sustainable development of pension systems and ensuring adequate pensions is to strengthen voluntary pension saving. In doing so, it is particularly challenging to address the low levels of coverage and contributions and the low level of interest among workers in this type of saving. Jackson (2017) points out that "emerging economies' success in ensuring retirement security will increasingly depend on their ability to build robust voluntary pension systems." Moreover, the long-term costs of maintaining a generous and strong third pillar are far lower than the costs of public pensions, and reversing the implemented reforms could actually worsen the already high fiscal burdens and pension adequacy. This article aims to explore the potential of voluntary pension saving in CEE countries to increase coverage and identify possible solutions to overcome researched obstacles to development. Therefore, the authors assess and provide an overview of the main proposed strategies and policies that have been recommended or already implemented. The article is organized as follows. After the introduction, Section 2 briefly describes the design of pension systems from CEE and focuses on the development of voluntary pension savings. Section 3 assesses the factors responsible for the underdevelopment of these institutions and the low interest of workers in this type of saving. Section 4 examines and compares the model of financial incentives aplicable in CEE countries. Finally, in section 6 we draw a conclusion.

2. OVERVIEW OF VOLUNTARY PENSION SCHEMES IN CEE COUNTRIES

All of analyzed CEE countries introduced the third pillar with a comprehensive pension reform aimed to add capitalized saving to PAYG system. The first CEE country that implemented supplementary elements of old-age pension system was the Czech Republic (1994). Few years later it was followed by Slovakia (1996), Poland (1999), Bulgaria (2002), Croatia (2002) and Romania (2007). In case of Poland, the third pillar was substantially broadened in 2004 and 2012. Old-age provision offering additional income at retirement, operates in form of a voluntary occupational pension fund (Bulgaria, Poland) or a voluntary individual pension plan (Bulgaria, Croatia, Czech Republic, Poland, Romania and Slovakia). Depending on the type of a plan, the contribution may be paid in by an employee, an employer or by both parties (Rutecka-Góra 2016). Main features of the voluntary pension systems in selected CEE countries is shown in Table 1.

Table following on the next page

Country	Introduction	Main features of the system
Bulgaria	2002	Voluntary supplementary pension funds Voluntary professional pension funds
Croatia	2002	Voluntary supplementary pension funds
Czech Republic	1994 2013	Supplementary Pension Savings and Insurance: Transformed Funds Supplementary Pension Savings Schemes: Participating Funds
Poland	1999 2004 2012	Occupational pension programmes (PPE) Individual Retirement Accounts (IKE) Individual Retirement Savings Accounts (IKZE)
Romania	2007	Voluntary private pensions
Slovakia	1996	Voluntary private pensions

Table 1: Elements of supplementary old-age pension systems in selected new member EU countries
(Source: prepared by authors based on Rutecka-Góra 2016)

However, two decades after the introduction of the voluntary savings pillar in CEEs pension systems, they are still underdeveloped and very few people opt for this savings option, especially among low-income workers. In Croatia, for example, voluntary pension schemes had a total of 380 555 members at the end of 2020. This indicates a very low coverage rate within the third pillar: 24.9% of the working population or only 9.4% of the total population. The possibilities are much greater, especially considering that the total assets under management of voluntary pension companies (HRK 5.14 billion) represent only 2.6% of the population's savings and time deposits (in HRK and foreign currency) in banks in 2020 (Olgić Draženović 2021). The current concept of individual voluntary pension schemes in most CEE countries has resulted in low coverage, due to low income levels and low savings rates. The number of contributors is relatively insignificant and they are mainly high income individuals (Rudolph 2016).

3. REASONS FOR UNDERDEVELOPMENT OF VOLUNTARY PENSION SAVINGS

Voluntary pension saving in CEE is burdened by the low participation rate and the low contribution rates of participants. On the contributors side Bosch et. al. (2019) identify the inertia of participants in terms of portfolio management (indecision, lack of planning, irregular rebalancing of portfolios, etc.). For pension fund management companies there are evidence of inadequately diversified investment portfolios (performance chasing or containing too many individual investments such as stocks). These problems have a strong social responsibility aspect, as they are more common among low-income earners with low levels of education (Viceira, 2010). Pieńkowska-Kamieniecka (2013) identifies low financial literacy and inefficient tax incentives in the CEE region as the main factors for insufficient participation in supplementary pension schemes. Szczepański and Brzęczek (2016) also found evidence that stronger tax incentives encourage greater coverage of voluntary plans among the working-age population in the Czech Republic, Slovakia, Hungary, and Poland.

Table following on the next page

	Barriers	Solutions
Demand side	• Limited savings capacity • Intrinsic characteristics of formal retirement savings products • incompatible with individual needs (illiquidity) • Psychological factors (behavioral biases) • Lack of education related to personal finance and social security • Lack of a culture of social security rooted in sociocultural factors	• Behavioral interventions • Financial and social security education
Supply side	• Lack of commercial incentives to reach self-employed and low-income workers • High collection costs for micro deposits • Insufficient reach of deposit networks in rural areas	• Financial technology and innovation

Table 2: Barriers and solutions for voluntary retirement savings among low-income and independent workers
(Source: prepared by authors based on Bosch et. al. 2019)

In conclusion, factors undermining the development of voluntary pension schemes in CEE countries, given their comparable characteristics due to a similar historical and political evolution and a comparable financial system development path (Viceira 2010; Le Blanc 2011; Pieńkowska-Kamieniecka 2013; Szczepański and Brzęczek 2016; Bielawska et. al. 2017):

- low level financial literacy
- limited knowledge of the pension system (this influences workers' decisions regarding their pension savings),
- lack of fair, predictable and transparent government policies in the long run,
- economic factors - low income levels and unfavourable macroeconomic conditions,
- social factors (biheviour) - the average investor in CEE countries is risk averse and conservative (relying on traditional forms of savings),
- typical investor (saver) concerns - inflation risk, lack of control over investments, inflexibility of income.

4. POSSIBILITIES FOR ENHANCEMENT OF THIRD PILLAR IN CEE

In order to define and implement strategies for broadening and deepening the voluntary pension system of CEE, it is useful to draw from the experience of the developed countries. Le Blanc et. al. (2011) delivered comprehensive study of the institutional environment of voluntary pension accounts in eleven European countries (old members). They found evidence that wealth and high income increase the likelihood of paying into the third pillar, while high educational attainment is the most important determinant of saving. This supports the view of Jackson (2019) that pension literacy interventions are particularly important for low earners, who will have a low propensity to save for the third pillar.

Rudolph (2016) highlihts the main drivers of participation in funded schemes:

- compulsion: individuals are required to contribute to a pension scheme at a certain contribution rate,
- supply-side factors: these include the use of sales agents to encourage participation,
- positive peer pressure,
- soft compulsion.

Compulsion does not apply for CEE countries in terms of the given structure of pension systems and the voluntary accession of workers to these systems. In the supply-side method, the voluntary pension fund company works with the life insurance industry to stimulate demand for insurance products through its sales force and direct advertising. Often this method is used in conjunction with tax incentives. Nevertheless, this method is not suitable for CEE countries as it mainly targets high earners due to the higher potential commissions that salespeople can earn. This leaves a large proportion of middle- and low-income earners excluded from voluntary pension schemes. Positive peer pressure is a method often used in closed voluntary pension funds to increase the participation of low-income earners. This method relies on peers urging each other to enroll in pension plans. It requires influencing the decisions of passive savers, but only works if there are benefits to successfully "pushing" a colleague to enroll. This method requires a combination of tax incentives, matching contributions, and management persuasion. Soft compulsion methods are more sophisticated methods of encouraging participation. An example of this method would be automatic enrolment, where employers are required to sign their employees up to a voluntary pension scheme, but employees still have the option to opt out if they wish. This method takes advantage of the negative factors already mentioned as influencing low participation rates. These include inertia, indecision, procrastination, and passing over investment as a default option (Rudolph 2016). There are different approaches for enhancement of the voluntary schemes in CEE. These methods can be combined in otrder to be most effective. First and second approach include financial incentives i.e. tax and non-tax incentives. These direct financial subsidies are the most commonly used methods to encourage voluntary retirement saving. Historically, tax incentives have been the predominant type of incentive, but they are proven to be expensive to the government in terms of lost tax revenue. Furthermore, they are effective, but not a sufficient condition for a significant increase in voluntary saving. In Croatia, for example, voluntary pension saving is tax-advantaged compared to other savings products, as it includes government incentives, fund returns and tax relief for employers. However, in 2020 only 9.4% of the total population save in a voluntary pension funds which proves that this is not yet sufficient to attract significant funds and new members, and to noticeably improve the living standards and well-being of citizens. It seems that the greatest impact is on higher income groups, while the impact on less educated citizens with low levels of education is low, leading to distributional problems (Hinz 2019). Furthermore, lower income workers should be properly addresed because of their loss aversion and low trust in the system On the other hand, it is advisable to allow withdrawals allongside with defined limitation, penalization or discouraging to exit the system of voluntary saving. Second approach include financial non-tax incentives. They include matching contributions and nominal fixed subsidies paid into the retirement accounts of eligible individuals. Matching contributions are combining employer contribution based on the amount of workers annual contribution. Typically, employers match a percentage of employee contributions, up to a certain portion of the total salary. According to Rutecka-Góra et.al. (2018) matching contributions can provide a larger financial incentive than tax preferences, especially for employees who have low or zero marginal tax rates. Another option for policy makers could be to introduce automatic enrolment (default option) in voluntary schemes.

This method is based on behavioral economics. It involves workers enrolling in a pension plan by default, but with an option to opt out within certain time limits and under certain conditions. This policy harnesses the power of inertia and procrastination to keep people in the plan (OECD 2019). At the same time, the opt-out option retains individual choice and responsibility for the decision to participate in the plan. In addition, automatic enrolment is usually associated with default options for contribution rate, investment strategy, or the pension provider, allowing individuals who do not want to or cannot make a decision to join the pension plan without having to worry about these parameters. Thus, autoenrollment is based in part on the theory of suficient latent demand for pension coverage, but fixed costs, lack of knowledge about investing, and inertia may prevent workers from acting on that demand (Rutecka Gora, Vostatek, Turner 2018). In addition, some people who otherwise would not be interested in pension coverage may continue in coverage once they are automatically enrolled due to inertia, or perhaps, once covered they feel like it is the right thing to do Jackson (2019) notes that in addition to automatic enrolment, one of the world's best practices is auto escalation. He suggests setting the default rate low at the beginning and automatically increasing it over time because once enrolled in the plan, the average worker will stay in the plan out of inertia. On the other hand, one of the obstacles is that this method tends to be more costly for employers and governments than mandatory or voluntary opt-in arrangements. A study by Vanguard (2014) shows that automatic enrolment has little impact on participation in the highest income brackets. The impact is strongest among low- and middle-income earners, younger workers who are early in their careers, and men in general. Therefore, automatic enrolment provides broader and fairer coverage in obtaining a supplementary pension. Automatic enrollment has become mandatory for Polish employers (50-250 employees) starting in 2020. Enrolment for employees can be considered voluntary as they can opt out (resign) at any time. Compared to traditional state pension pillars, these schemes are based on cooperation between employers, employees and the state.

5. CONCLUSION

The design of the voluntary pension system and the implementation of appropriate government inventions are crucial to the creation of a stable pension system. Therefore, many CEE countries have taken measures to encourage additional saving for retirees and to make voluntary pensions a prominent feature of the pension landscape in the coming years. Since tax incentives have proven to be effective but not sufficient conditions for a significant increase in voluntary saving as policy measures to promote additional pension saving, it is therefore important to focus on non-tax incentives. In general, a combination of non-tax incentives and financial education should be pursued to achieve high coverage of voluntary retirement savings. One of the best options for strengthening the third pillar in CEE countries, based on the experience of developed countries, is automatic enrolment with an opt-out option. The system of voluntary private pensions and savings can ultimately become an important lever for economic growth, improving living standards in the third age and the welfare of citizens. Further improvement of voluntary pension systems in the CEE countries could be crucial both to achieve sustainability and adequacy of pensions and to find a remedy for overdependence on the state.

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LITERATURE:

1. Bielawska, K., Chłoń-Domińczak, A., Stańko, D. (2017). *Retreat from mandatory pension funds in countries of the Eastern and Central Europe in result of financial and fiscal crisis: Causes, effects and recommendations for fiscal rules*, MPRA Paper 83345, University Library of Munich, Germany.
2. Bosch, M., Caballero, G., Cofre, G., Gonzalez, S., Hand, A., Keller, L., Silva-Porto, M. (2019). *How to Promote Retirement Savings for Low-Income and Independent Workers: The Cases of Chile, Colombia, Mexico and Peru*. Inter-American Development Bank, Labor Markets Division, Technical note no. IDB-TN-1777.
3. Jackson, R. (2019). *Voluntary Pensions in Emerging Markets: New Strategies for Meeting the Retirement Security Challenge*, Global Aging Institute. Retrieved 25.9.2021. fromhttp://www.globalaginginstitute.org/assets/client-assets/common/downloads/publications/2019-Voluntary-Pensions-in-Emerging-Markets-EN.pdf
4. Le Blanc, J. (2011). *The third pillar in Europe: institutional factors and individual decisions.* Discussion Paper Series 1: Economic Studies 2011, 09, Deutsche Bundesbank. Retrieved 8.10.2021. from https://ideas.repec.org/p/zbw/bubdp1/201109.html
5. OECD (2019), Financial Markets Insurance and Pensions: Inclusiveness and Finance, Retrieved 20.9.2021. from https://www.oecd.org/finance/financial-markets-insurance-and-pensions-2019.htm
6. Olgić Draženović, B. (2021). *Voluntary pension funds in Croatia: Investment performance and incentives,* DIEM, 6 (1), p. 127-136. https://doi.org/10.17818/DIEM/2021/1.1
7. Olgić Draženović, B., Hodžić, S., Maradin, D. (2019). Efficiency of Mandatory Pension Funds: Case of Croatia, *The South East European Journal of Economics and Business,* Vol. 14, No. 2, p. 82-94.
8. Olgić Draženović, B., Suljić Nikolaj, S., Buterin, V. (2019). *Institutional challenges for mandatory pension funds in Central and Eastern Europe, Economic and Social Development* (Book of Proceedings), 45th International Scientific Conference on Economic and Social Development - XIX International Social Congress (ISC 2019), Vinogradova, M.; Cuic Tankovic, A.; Pavelin, G. (ed.), Moskva: Varazdin Development and Entrepreneurship Agency, Varazdin, Croatia; Russian State Social University, Moscow, Russia, p. 349-357.
9. Pieńkowska-Kamieniecka, S. (2013). The role of additional pension plans in selected countries in Central and Eastern Europe, The Economies of Balkan and Eastern Europe Countries in the changed World, 143
10. Rudolph, H. (2016). *Building Voluntary Pension Schemes in Emerging Economies*. Policy Research Working Paper 7779, World Bank Group, Washington DC. Retrieved 20.9.2021. from https://openknowledge.worldbank.org/handle/10986/24860
11. Rutecka-Góra, J. (2016). Evolution of supplementary old-age pension systems in selected CEE countries. Journal of Management and Finance, 14(4), p. 149-162.
12. Rutecka-Góra, J., Vostatek, J., Turner, J.A. (2018). Extending pension coverage: Tax versus non-tax incentives, ACTA VŠFS Ekonomicke studie a analyzy, 2, vol. 12, p. 107-124.
13. Szczepański, M., Brzęczek, T. (2016). Risk management in occupational Pension schemes. Institutional, fiscal – economic and demographic determinants", Polish Economic Society, Poznań, Rzecznik Finansowy / Fundacja Edukacji Ubezpieczeniowej
14. Vanguard (2014). How America Saves 2014: A report on Vanguard 2013 Defined Contribution Plan Data. Retrieved 20.10.2021. from https://institutional.vanguard.com/content/dam/inst/vanguard-has/insights-pdfs/21_CIR_HAS21_HAS_FSreport.pdf

15. Viceira, L. (2010). Application of Advances in Financial Theory and Evidence to Pension Fund Design in Developing Economies. in: Hinz, R, Rudolph, H, Antolin, P & Yermo, J, *Evaluating the Financial Performance of Pension Funds*, World Bank, Washington DC, p. 203-243.

THE IMPORTANCE OF BANK LENDING FOR THE DEVELOPMENT OF THE ECONOMY

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ABSTRACT

The aim of this paper is to assess the relationship between the development of bank loans and the development of the economy. We examine short-term and long-term relationships. We consider the short, medium and long-term loans by the central bank classification, in the analysis. We quantify the development of the economy using a standard indicator of the development of gross domestic product. We examine the relationship on the example of the Czech banking sector and the Czech economy in the period 1997 - 2020 using quarterly data. We use econometric methods - Engle-Granger test of cointegration and Granger causality test. In the case of the relationship between medium-term/long-term loans and economic development, we concluded the cointegration of the given time series, so there is a long-term relationship between them. In the case of the relationship between short-term loans and economic development, the long-term relationship was not confirmed, so we used the Granger causality test. The results show that with the help of the development of short-term loans one, two and three quarters ago, we can refine the development of GDP at present. The opposite short-term relationship has not been proven. Our results confirm the importance of bank lending to support economic development. At the same time, the development of the economy can influence bank lending, namely medium-term and long-term loans. Both confirms the importance of a functioning banking sector for the development of the economy.

Keywords: *bank loan, development of the economy, cointegration, Engle-Granger causality*

1. INTRODUCTION

The aim of any economy is to achieve long-term sustainable growth and thus raise the standard of living of its people. The main sources of economic growth are human, physical and financial capital, workforce and natural resources. At present, the productivity of production factors and the increasing rate of innovation are also gaining considerable importance. To develop these drivers of the economy, it is important to have sufficient financial resources available. These can be obtained through bank lending. Lending activities have been among the banking sector's core activities for a long time. Despite a certain shift towards other activities, demand for credit is still high and thus represents a crucial source of finance for the business sector, but also for

many households. Economic activity and economic performance are thus linked to bank lending. Investments financed in large part by bank loans can stimulate economic development. In theory, this is the classical multiplier theory. It then depends on the value of the multiplier of a given sector as to how the investment will be reflected in the growth of the economy. Accelerator theory, on the other hand, explains that rising economic performance can stimulate further investment growth. If we assume that a crucial part of investment in bank-oriented market economies is financed by bank loans, we will be interested in the relationship between the development of bank loans and the development of the economy. Specifically, we will examine the importance of different types of credit classified by maturity - short-term, medium-term and long-term - and their link to the performance of the economy. We will examine this relationship from the perspective of both multiplier and accelerator theory. The aim of the paper is therefore to examine the interrelationship between the development of bank lending and the development of the economy, in the short, medium and long term. The paper is divided into several parts. After the introduction, where the relevance and significance of the relationship under study is introduced and the objective is defined, the literature research follows. Next, the data and methods used are presented. The next section presents the results of the analyses including econometric explanations. This section is followed by the discussion of the results, where the results are interpreted in economic terms. Everything is then summarized in the last section Conclusion.

2. THEORETICAL BACKGROUND

There are many studies focusing on one particular economy or on several countries. It is interesting to see whether this is a similar relationship independent of the country analysed or whether the results vary by country. Among the most important studies is that of Banu (2013). It focuses on the relationship between credit and GDP development in the context of the financial crisis. According to her, the rising level of lending was a major factor in the financial and economic crisis in Romania. Thanks to these loans, economic subjects invested in real estate and luxury goods that they would not have been able to afford with normal financing. Based on the results, it finds a high correlation between the evolution of credit to the private sector and the evolution of the economy. In contrast, a low degree of dependence holds for credit to the public sector and GDP. The values of the multiplier and accelerator are minimal here. Rondorf (2012) examined whether changes in bank lending have a significant effect on output growth in the euro area. He assumed the significance of the bank lending channel. He used shocks to money demand as a credit variable following Driscoll (2004). Using a cross-country panel estimation, he tested the impact of a change in the supply of credit on output growth. In contrast to the United States, he confirmed the evidence that credit fluctuations led to a response in output in the euro area, supporting the view that credit has an impact on economic development. Thus, bank credit still plays a crucial role in corporate financing, although securitisation of debt has increased rapidly over the past decade. Kelly, McQuinn and Stuart (2013) focus on Ireland, which experienced a credit boom in the years analysed. Their subject of interest was credit to the private sector. Using a Markov switching multifractal, they demonstrated the impact of credit extended on the evolution of the economy as measured by gross domestic product. Moindescu and Codirlasu (2013) focus on the new member states of the European Union. They started from a financial accelerator theory with feedback effects, where the central variable was the change in credit flow. The results of the study showed that the change in credit flows positively affects the emergence of economic fluctuations. Moreover, credit growth has an impact on the quality of the bank portfolio. The authors concluded that it is essential to maintain a relatively constant level of lending, which should be correlated with potential growth. This principle then leads to avoiding an increase in the real economy's indebtedness and an increase in credit risk.

However, if credit growth is excessive, this leads to a deepening of the recession in subsequent years due to the negative feedback effect. Fukuda (2001) focused on the banking market and economies of East Asia. He came to the interesting conclusion that short-term loans are the most important in this region. He pointed out that the effective role of banks improves economic welfare. He notes that short-term credit contributed significantly to the remarkable economic growth of post-war Japan in a regulated financial market. Morakinyo and Sibanda (2016) analyzed bank credit, government expenditure growth rate, household expenditure and inflation rate in Nigeria between 1998 and 2014. They relied on an endogenous growth model to examine the relationships. Their results show that there is a long-run common movement. They further concluded that higher level of consumer credit in the economy has a negative and direct impact on economic growth. The study by Zortuk and Celik (2014) notes the importance of the relationship between credit and economic growth for the Turkish economy. The smooth functioning of the banking market is crucial. In contrast, the credit channel is distorted by the public sector deficit.The authors conclude a cointegration between the percentage change in GDP and the change in the volume of credit. They find a reciprocal relationship between the two. They explain the impact of economic growth on credit by increasing savings in times of growth and reducing the cost of credit through interest rates. Yuksel and Kavak (2019) also focus on the Turkish economy. However, these authors investigate the relationship between mortgage lending and economic development over the period 2005-2017. They choose the Engle-Granger cointegration test as their method. They concluded a long-run relationship and recommended support for the mortgage market that will lead to economic growth in the long run. Makinde (2016) in his study considered gross domestic product as the dependent variable and commercial banks' lending to key sectors in Nigeria – namely industry, manufacturing, agriculture and service sector as explanatory variables. The study revealed that only the agricultural sector used a large amount of bank credit and these loans extended had a positive impact on gross domestic product. Other sectors such as mining and quarrying, manufacturing and construction were not receiving as much bank credit to support the development of these sectors. The study therefore recommended that more credit should be directed to other sectors such as mining, manufacturing and service industries to ensure inclusive sectoral growth that will promote sustainable growth and development. Similarly, Černohorský (2017) focused on the structure of credit in terms of time and its relationship with economic growth. He found that long-term credit and the resulting long-term investment contribute to long-term economic growth. The author also used the Engle-Granger cointegration test and Granger causality. He concluded that only short-term consumer credit does not have a long-run effect on economic development and is rather dependent on economic development (according to the accelerator theory). On the other hand, long-term loans are important for the development of the economy, both in terms of their value and because they develop in line with the economy in the long run. There is therefore a correlation. In contrast, bank lending does not play a large role in the US (Driscoll, 2004). There, firms' dependence on banks is lower and therefore the supply of credit seems to be insignificant for output growth. However, Driscoll draws on the dependence of economies on banks and notes three main implications: the monetary transmission mechanism works through bank credit markets, bank failures can cause recessions and bank regulation can be a source of monetary policy shocks as significant as changes in base interest rates. He concludes that shocks to the demand for money have a large and statistically significant effect on the supply of bank credit, but that credit has a small, often negative and statistically insignificant effect on output. The credit channel has a small or ambiguous macroeconomic impact. Černohorská and Kula (2017) reach a similar conclusion as previous study. In addition to the relationship between credit and economic development, they also focused on the impact of the monetary aggregate M3. They examined the relationships in the euro area, Japan and the US over the period 2000-2015.

They do not confirm a positive relationship between the observed variables and explain this mainly by the fact that more than a third of the period under study was a period of financial crisis. During this period, the money supply and credit grew rapidly, but the GDP of the regions did not.

3. DATA AND METHODOLOGY

In this paper, we use data on short-, medium- and long-term credit in the Czech Republic for the years 1997-2020. We use quarterly data. The GDP time series consists of values in constant prices adjusted for seasonal effects. All data are available in the Czech National Bank's ARAD database (Czech National Bank, 2021). In order to assess the short-run and long-run relationship of the time series, we use the Engle-Granger cointegration test to test the long-run relationship and the Granger causality test to test the short-run relationship. These methods are widely used by central banks in their analyses and in many of the papers mentioned above. Their advantage is that they have been developed specifically for time series analysis and avoid the possibility of spurious regression that might occur if classical regression analysis were used. The calculations were performed in the Gretl software program. A brief description of the principle of both methods is given below. The first step is to calculate the optimal lag length for the dependent variable. According to Ivanov and Kilian (2005), the Akaike information criterion (AIC) is the most appropriate for VAR models as it leads to the most accurate estimates. The AIC criterion can be expressed by the formula:

$$AIC = n \cdot ln\left(\frac{RSS}{n}\right) + 2k \tag{1}$$

where *RSS* is the residual sum of squares, *n* the number of measurements, *k* the number of parameters and *RSS/n* the residual variance.

The best lag length is the one in which the AIC criterion reaches the lowest values. The resulting lag length is then used in the next calculation. The second step is to verify the stationarity of the time series by verifying the presence of a unit root. A process can be called stationary if the characteristics of its random variables are invariant over time. Formally, according to Arlt and Arltová (2009), the possible stationarity conditions can be written as follows:

- mean value function:

$$\mu_t = E(X_t) \tag{2}$$

- variance function:

$$\sigma_t = D(X_t) = E(X_t - \mu_t)^2 \tag{3}$$

- covarience function:

$$\gamma(t, t-k) = E(X_t - \mu_t)(X_{t-k} - \mu_{t-k}) \tag{4}$$

- correlation function:

$$\rho(t, t-k) = \frac{\gamma(t, t-k)}{\mu_t \sigma_{t-k}} \tag{5}$$

where $E(X_t)$ is the mean, X_t is the dependent variable and $D(X_t)$ is the variance.

The third step is to perform the Augmented Dickey-Fuller test (ADF test). The ADF test examines whether the time series contains a unit root, that is, whether $\varnothing = 0$. If there is a unit root, the data is non-stationary. When testing for a unit root, the following process shape can be assumed (Arlt and Arltová, 2009):

$$\Delta X_t = (\emptyset_1 - 1)X_{t-1} + \sum_{i=1}^{p} ai\ \Delta X_{t-1} + e_t \quad (6)$$

where X_t is the dependent variable, p the lag and e_t the residual component.

Next, we compare the *p-value* with significance level $\alpha = 0.05$. If the *p-value* is greater than the significance level α, we do not reject the null hypothesis and the data is non-stationary. In this case, the original time series must be adjusted by differencing (creating a first difference) and the newly obtained data are again tested for stationarity. However, if the p-value is below the significance level α, the null hypothesis is rejected and the time series can be stated to be stationary. We then proceed with the cointegration analysis and use the Engle-Granger test. It is important to distinguish between short-term and long-term relationships. Short-term relationships disappear over time, long-term relationships are stable and unchanging. Time series can be considered as unintegrated if the deviation of their direction of development is of a long-term nature. The Engel-Granger test examines the existence of a unit root and the following hypotheses are stated for it:

- H_0: the time series are not cointegrated;
- H_1: time series are cointegrated.

The conclusion of the test is again expressed using the *p-value*, which is compared with the significance level $\alpha = 0.05$. If the *p-value* is greater than the significance level α, we do not reject the null hypothesis and the variables tested are not cointegrated. The variables should then be tested for possible causal relationships using Granger causality. The basic idea of Granger causality is that if series *X* affects series *Y*, then series *X* should improve the predictions of series *Y*. We choose as the best fitting model the one that takes the minimum value of the AIC criterion. For the Granger causality test, the following hypotheses are stated:

- H_0: variable X does not affect variable Y in the Granger sense;
- H_1: variable X affects variable Y in the Granger sense.

The basic models have the following shape (Hušek, 2007):

$$Y_t = \sum_{i=1}^{p} a_i Y_{t-i} + u_t \quad (7)$$

$$Y_t = \sum_{i=1}^{p} a_i Y_{i-r} + \sum_{i=1}^{p} \beta_i X_{t-i} u_t \quad (8)$$

where α_i, β_i are the coefficients of the variables, X_t, Y_t are the time series of the variables, u_t is the random component.

For the Granger causality test, we test for interactions up to eight lags in the case of quarterly data, which corresponds in reality to a 2-year time lag that is still economically interpretable.

The evaluation is based on a comparison of the achieved value of the test statistic and the significance level. If the value obtained is greater than the significance level, then we do not reject the null hypothesis and the changes in the independent variable do not explain the changes in the dependent variable. We reject the null hypothesis if the *p-value* is less than the significance level α.

4. EMPIRICAL RESULTS

First, we determined the optimal lag length based on the AIC criterion using VAR models. We report the results of this test in the following table, respectively we only report the lag lengths for which the lowest values were calculated. We have indicated the lower value including the optimal lag order in bold. The GDP variable is dependent in all cases below.

Variables	**AIC with constant**	**Lag lengths (with constant)**	**AIC with constant and trend**	**Lag lengths (with constant and trend)**
GDP – Ls	**-5,517621***	**1**	-5,498691*	1
GDP – Lm	**-5,518099***	**1**	-5,501010*	1
GDP – Ll	**-5,505654***	**1**	-5,498333*	1

Table 1: Test results for optimal lag length
(Source: own calculation)
Ls … short-term loans, Lm … medium-term loans, Ll … long-term loans

In the following calculations, we consider a lag of 1 quarter and use a test with a constant. In the next step, we need to check the stationarity of the time series. The results of the ADF test are shown in the following table. We consider log-logarithmic time series. The label *d* represents the differenced time series, and the label *d_d* denotes the second difference of the time series.

Time serie	**p-value**	**H_0**	**Stationarity**
l_GDP	0,8979	not rejected	non-stationary
l_Ls	0,1157	not rejected	non-stationary
l_Lm	0,2902	not rejected	non-stationary
l_Ll	0,8317	not rejected	non-stationary
d_l_GDP	$1{,}816 \cdot 10^{-10}$	rejected	stationary
d_l_Ls	0,05604	not rejected	non-stationary
d_l_Lm	0,0004867	rejected	stationary
d_l_Ll	0,2168	not rejected	non-stationary
d_d_l_Ls	$5{,}578 \cdot 10^{-28}$	rejected	stationary
d_d_l_Ll	$2{,}104 \cdot 10^{-26}$	rejected	stationary

Table 2: ADF stationarity test results
(Source: own calculation)

The assumption of non-stationarity of the time series was confirmed, using the first and second difference we adjusted the time series to a stationary form.

The results of the Engle-Granger test are shown in the following table. We examine the relationships between GDP and short-term, medium-term and long-term loans. We use a lag of 1 quarter and employ a constant test.

Variables	**p-value**	**H_0**	**Relationship**
GDP – Ls (*GDP* is dependent)	0,2039	not rejected	no cointegration
Ls – GDP (*Ls* is dependent)	0,2039	not rejected	no cointegration
GDP – Lm (*GDP* is dependent)	$2{,}66 \cdot 10^{-9}$	rejected	cointegration
Lm – GDP (*Lm* is dependent)	$2{,}66 \cdot 10^{-9}$	rejected	cointegration
GDP – Ll (*GDP* is dependent)	$5{,}73 \cdot 10^{-56}$	rejected	cointegration
Ll – GDP (*Ll* is dependent)	$5{,}73 \cdot 10^{-56}$	rejected	cointegration

Table 3: Results of Engle-Granger cointegration test
(Source: own calculation)

Based on the results of the Engle-Granger cointegration test, it can be concluded that there is a long-run relationship between the development of medium- and long-term credit on the one hand and GDP on the other. This relationship is demonstrated in both directions. It was not possible to quantify the long-term relationship between short-term credit and GDP using the chosen method. Therefore, the next step is to conduct a Granger causality test for these two variables. The results of the Granger causality test for the variables under study are presented in the following tables. The first column shows the independent variable and its lag in quarters. The second column shows the calculated *p-value*. The third column shows the significant coefficient at the 0.01 (***), 0.05 (**) and 0.1 (*) significance level using asterisks. In our case, we are interested in values higher than the chosen significance level of 0.05. The last column indicates whether the null hypothesis is rejected or not. If we reject the hypothesis, it means that one variable influences the other.

Variables	**p-value**	**H_0**
d_l_GDP_1	0,4276	not rejected
d_l_GDP_2	0,3175	not rejected
d_l_GDP_3	0,1514	not rejected
d_l_GDP_4	0,9502	not rejected
d_l_GDP_5	0,7244	not rejected
d_l_GDP_6	0,9075	not rejected
d_l_GDP_7	0,7920	not rejected
d_l_GDP_8	0,8411	not rejected

Table 4: Dependence of short-term credit on lagged GDP (in Granger term)
(Source: own calculation)

Variables	p-value	H_0
d_l_Ls_1	$2{,}23 \cdot 10^{-10}$ ***	rejected
d_l_Ls_2	$2{,}57 \cdot 10^{-7}$ ***	rejected
d_l_Ls_3	0,004 ***	rejected
d_l_Ls_4	0,5171	not rejected
d_l_Ls_5	0,2008	not rejected
d_l_Ls_6	0,1379	not rejected
d_l_Ls_7	0,0713*	not rejected
d_l_Ls_8	0,5447	not rejected

Table 5: Dependence of GDP on lagged short-term credit (in the Granger term) (Source: own calculation)

From the values in the tables, we can see that by using the development of short-term credit one, two and three quarters ago, we can improve the evolution of lagged GDP. This means that the development of short-term credit one, two and three quarters ago affects GDP at present in a Granger sense.

5. DISCUSSION

Long-term loans, which are the most important loans in the economy in terms of value and importance, have a long-run two-way relationship with GDP. We can therefore conclude that the development of investments financed by long-term loans affects the development of the economy measured by GDP. This corresponds to the concept of a multiplier. At the same time, we can conclude that the evolution of GDP affects the evolution of long-term loans, which we assume to be used to finance real investment. This then corresponds to the concept of an accelerator. In summary, this confirms the theoretical concept of the multiplier and accelerator in the economy. The same conclusion also applies to the relationship between the development of medium-term credit and GDP. The development of short-term credit in the Czech Republic has not been linked to economic developments in the long run. However, we have shown a short-run relationship in the direction of the effect of short-term credit development with a lag of 1, 2 and 3 quarters on the current development of the economy (in the Granger sense). It is clear that even short-term credit, primarily consumer credit, increases consumption, especially by households, and thus affects a major part of the spending of economic actors and thus the overall performance of the economy. On the other hand, however, no relationship has been shown whereby the development of the economy has an effect on the development of short-term credit. This is explained by the fact that economic entities do not take how the economy is doing as a major factor when applying for short-term credit. Summarising the above and taking into account the fact that the share of long-term and medium-term loans is crucial in the economy, we can conclude that the multiplier effect works in the Czech economy. It is certainly true that the money generated by lending creates real values, such as the construction of factories, halls, the purchase of machinery and equipment, the construction of buildings, the expansion of production, etc. These goods continue to operate in the economy and are used to generate other goods, usually for consumption, which increases spending by households, firms, the state and abroad. This increases the output of the economy. From a practical perspective, this confirms the importance of credit for economic growth and decline in a market economy. From a theoretical perspective, it confirms the functioning of the multiplier effect in the economy.

At the same time, there is an acceleration effect in the Czech economy and, according to our calculations, it primarily concerns long-term and medium-term loans. It is therefore true that if the economy is growing, the confidence of economic subjects in a positive future development increases. This increases the demand for medium- and long-term credit. These loans are then used to finance investment projects by firms and households. From a practical point of view, economic developments stand out as an important factor in the growth of the lending rate. This brings with it both positives and negatives. The positive side is the higher availability of credit in good times to finance investment activities, while the negative side may be the gradually rising share of non-performing loans in times of crisis, which may threaten the stability of the financial system. The bidirectional relationship of the variables under study is declared, as we do, by Zortuk and Celik (2014) and Yuksel and Kavak (2019). They define this relationship specifically for long-term credit and economic development. Černohorský (2017) in his previous study, where he structured loans by sector and not by maturity, also reaches the same conclusions. The only difference is that the evolution of consumer credit (usually short-term) is more dependent on the evolution of the economy (in the Granger sense). For the other variables examined, long-run bidirectional relationships emerge. Further, our findings are consistent with the view of most of the studies cited in the review (Banu, 2013; Rondorf, 2012; Kelly,McQuinn and Stuart, 2013; Moindescu and Codirlasu, 2013) regarding the effect of credit development on economic development. The conclusions of Morakinyo and Sibanda (2016) are slightly different, finding a negative effect on economic growth only for short-term credit.
In contrast, Fukuda (2001) concluded that the most important types of credit are short-term loans. The different results can certainly be explained by the specificity of the Asian market. Furthermore, our results are inconsistent with Driscoll (2004). This can be explained by the specificity of the US market, which is certainly not as bank-oriented. As for the value of large financial resources, these are primarily raised here by issuing stocks or bonds. A similar conclusion was also reached by Černohorská and Kula (2017). Here, the different results are also explained by the different markets (again Japan and the USA) and also by the period of the financial crisis, which had a greater impact on the financial markets in these countries than in the Czech Republic.

6. CONCLUSION

The aim of the paper was to assess the relationship between the development of bank loans and the development of the economy in the short-, medium- and long-term. We used the Engle-Granger cointegration test and the Granger causality test to analyse the data. We concluded that the money generated by bank lending has an impact on the performance of the economy. From a practical perspective, this confirms the importance of lending for economic growth and decline in a market economy. From a theoretical point of view, the operation of the multiplier effect in the economy is confirmed because we assume that the loans granted are used primarily to finance investment. For the relationship between medium- and long-term credit and economic growth, we have also shown an inverse relationship, where the performance of the economy affects the granting of these types of credit. From a practical point of view, economic development stands out as an important factor in the growth rate of credit, which can bring with it certain positives and negatives. From a theoretical perspective, we have demonstrated the operation of the acceleration principle in the economy. The only relationship that we have not been able to demonstrate with the chosen methods is the effect (in the Granger sense) of economic development on short-term lending. We explain this by the fact that economic actors do not take how the economy is doing as a crucial factor when applying for short-term credit. Based on the above, we find the contributions of this paper to be both theoretical and practical, i.e. they can be taken into consideration in the conduct of monetary policy and banking regulation.

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LITERATURE:

1. Arlt, J. and Arltová, M. (2009). *Ekonomické časové řady.* Professional Publishing, Praha.
2. Banu, I. M. (2013). The Impact of Credit on Economic Growth in the Global Crisis Context. *Procedia Economics and Finance*, Vol. 6, No. 1, pp. 25-30.
3. Czech national bank. (2021). ARAD. [online]. Retrieved 15.10.2021 from https://www.cnb.cz/docs/ARADY/HTML/index.htm
4. Černohorská, L. and Kula, V. (2017). The effect of M3 monetary aggregates and bank loans on the economic growth of countries in the Eurozone, the USA and Japan. *Scientific papers of the University of Pardubice*, Vol. 24, No. 40, pp. 27-38.
5. Černohorský, J. (2017). Types of bank loans and their impact on economic development: a case study of the Czech Republic. *E+M. Economics and Management*, Vol. 20, No. 4, pp. 34-48.
6. Driscoll, J. C. (2004). Does bank lending affect output? Evidence from the U.S. states. *Journal of Monetary Economics*, Vol. 51, No. 3, pp. 451-471.
7. Fukuda, s. (2001). The Impacts of Bank Loans on Economic Development: An Implication for East Asia froman Equilibrium Contract Theory. *National Bureau of Economic Research,* Vol. 10, No. 1, pp. 117-145.
8. Hušek, R. (2007). *Ekonometrická analýza*. Oeconomica, Praha.
9. Kelly, R., McQuinn, K. and Stuart, R. (2013). Exploring the Steady-State relationship between credit and GDP for a small open economy the case of Ireland. *ECB working paper series*, No. 1531, pp. 1-37.
10. Makinde, H. O. (2016). Implications of commercial bank loans on economic growth in Nigeria (1986-2014). *Journal of Emerging Trends in Economics and Management Sciences*, Vol. 7, No. 3.
11. Moinescu, B. G. and Codirlasu, A. (2013). Lending, economic growth and nonperforming loans: empirical evidencesfrom the new EU member states. *Romanian National Authority for Scientific Research* [online]. https://pdfs.semanticscholar.org/61c7/a633e918ae2103240a8eb029f2d447430e12.pdf
12. Morakinyo, A. and Sibanda, M. (2016). Non-Performing Loans and Economic Growth in Nigeria: A Dynamic Analysis. *SPOUDAI – Journal of Economics and Business, University of Piraeus*, Vol. 66, No. 4, pp. 61-81.
13. Rondolf, U. (2012). Are bank loans important for output growth?: A panel analysis of the euro area. *Journal of International Financial Markets, Institutions and Money*, Vol. 22, No. 1, pp. 103-119.
14. Yüksel, S. and Kavak, P. T. (2019). Do Financial Investment Decisions Affect Economic Development?: An Analysis on Mortgage Loans in Turkey. *Handbook of Research on Global Issues in Financial Communication and Investment Decision Making*, Vol. 1, pp. 168-191.
15. Zortuk, M. and Celik, Y. (2014). The Relationship Between Bank Loans And Economic Growth In Turkey: 1995-2010. *Alphanumeric journal*, Vol. 2, No. 2.

ANTECEDENTS AND DETERMINANTS OF E-GOVERNMENT ADOPTION AMONG CITIZENS: EMPIRICAL EVIDENCE FROM EMERGING MARKET

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ABSTRACT

The e-Government provides varieties of e-services to citizens and connects them with government more appropriately. Therefore, it is critical to understand which factors influence citizen's behavior to adopt e-government services. Adoption of e-government services benefits to citizens in different ways. This research has concentrated Pakistani e-Government system and investigates how e-government services meet with citizens expectations. Literature review is conducted to see how compatibility, innovation, computer self-efficacy, trust on internet, trust on government and degree of openness influence citizens behavior to adopt e-government services in Pakistan. The findings of this study will provide useful findings that how to improve citizens lives through e-government services. This study has synthesized literature and assumed that compatibility, innovation, computer self-efficacy, trust on internet, trust on government and degree of openness are the core factors which influence citizens behavior to adopt e-government services.

Keywords: *Compatibility, Innovation, Computer Self-efficacy, Trust of internet, Trust of Government, Degree of openness, Adoption of e-government*

1. INTRODUCTION

E-government is a new way of thinking about government, business and citizens. E-government offers public info networks and facilities available to the public in a useful and timely manner, improving information and communications technology(Mišutka & Galamboš, 2011; R. Samar & Mazuri, 2019). E-government is called digital data and online transaction services for citizens (Rahi, Othman Mansour Majeed, Alghizzawi, & Alnaser Feras, 2019; Shahzad & Sandhu, 2007). E-government is part of a knowledge community with easy access to electronic services, transportation, facilities, and social connections. This allows e-citizens to construct community websites and teach other communities while establishing the community's brand across many communication frontiers(Mellor, 2006; Rahi, Ghani, & Ngah, 2020). Authorizing e-citizens and municipal councilors is an essential component of bridging the digital divide(Rahi, Abd.Ghani, & Hafaz Ngah, 2019; Richter, Cornford, & McLoughlin, 2004). Citizens also have the option of providing their services directly through the Internet, through pavilions on mobile phones, or middlemen (Ondego & Moturi, 2016; Rahi & Abd. Ghani, 2019b). E-government services play a critical role in their unique citizen relationship, which has an influence on their obligations to preserve the privacy of personal information. Unlike private companies that offer goods and services to clients, government organizations are responsible for delivering services to a varied collection of people with varies of wishes, opinions, arrogances, cultures, tongues, and educational backgrounds (Kent & Millett, 2003; Rahi & Abd.Ghani, 2019). The World Wide Web and other new proper reporting technologies have makes it easier for the government to learn about and respond to people' needs.

The Internet not only makes goods, services, and content more visible, but it also raises levels of customer facility in a number of situations, including communications with the governments.(Rahi & Abd. Ghani, 2019a; Tat-Kei Ho, 2002). Mostly governments worldwide are working on new classy ways to encourage individuals to participate actively in e-government activities by providing better access to e-government services. The pattern has evolved from traditional government to electronic government due to development and the rapid rise of the Internet. With the cost and accessibility of information and technology, managements worldwide are encouraged to foster citizen participation, according to (Gauld, Goldfinch, & Horsburgh, 2010; Rahi & Abd. Ghani, 2019c).

2. LITERATURE REVIEW

2.1. Compatibility

Compatibility is a term in which an invention deemed to be consistent with established principles and standards of behavior, previous experiences, and the wants of future adopters (Rahi & Abd. Ghani, 2018; E. M. Rogers, 2003). According to studies on innovation dissemination and adoption, compatibility is a significant factor in influencing technology acceptance outcomes (Agarwal & Prasad, 1997). The compatibility considerably affects the accuracy of accept intended prediction(Carter & Bélanger, 2005; Rahi, Ghani, & Ngah, 2018). Compatibility is term as the degree to which an invention appears to be compatible with the present values, requirements, and prior experiences of potential Citizens. Compatibility is a crucial concept that positively influences the perceived usability of technology (Chau & Hu, 2002; Rahi, Ghani, Alnaser, & Ngah, 2018). According to Raymond Chong, Customers may believe that fitness is more compatible than other types of wearable. Whether they believe there are advantages to wearing fitness for particular activities. Compatibility refers to a match among citizens and professional lives cognitive abilities that would reinforce performance expectations, effort expectations.

H1: Compatibility has a direct effect on the intention to adopt.

2.2. Innovativeness

The term is innovation as translating thought into a new idea for a distinct or other unit of e-services adoption. Several scholars have utilized DOI to discuss adoption features of innovations(Everett Rogers, 1983; S. Samar, Ghani, & Alnaser, 2017). Innovation is the process of disseminating an innovation among Citizens of a social system through communication channels (EM Rogers, 1995; R. Samar, Norjaya, & Feras, 2017). Problems in the delivery and acceptance of electronic government services have been recognized as a cause of concern among citizens (Rahi, Ghani, & Alnaser, 2017; Tolba & Mourad, 2011). They blame their worries on the erroneous application of innovation diffusion theories and problems evaluating the variables that influence dissemination rates. The Invention is the instant in which an innovation can be seen as more beneficial than the idea that it will be adopted by a particular group of people (FMI Alnaser, Ghani, & Rahi, 2017; Robinson, 2012). He stresses that the pace of acceptance of an invention is closely linked to its perceived relative benefit. Firms must understand that embracing innovation provides solutions to inefficient current systems while also offering new possibilities in terms of increased productivity and operational efficiency (F Alnaser, Ghani, & Rahi, 2018; Mndzebele, 2013). Information should be able to develop and execute effective diffusion strategies that reflect their users' values, requirements, and behavior by understanding the variables that promote success and avoid failure. Therefore, innovation is hypothesized as:

H2: Innovation will have direct effect on e-government adoption.

2.3. Computer self-efficacy

Self-efficacy is one's assessment of one's ability to plan and carry out actions consistent with one's intended outcomes(F. M. I. Alnaser, M. A. Ghani, S. Rahi, M. Mansour, & H. Abed, 2017; Bandura, 1986). CSE is a level of self-efficacy that can explain how citizens adopt new technologies (F. Alnaser, M. Ghani, S. Rahi, M. Mansour, & H. Abed, 2017; T. Teo, 2009). It can be well-defined as the confidence in one's capacity to arrange the inspiration, thinking, and action sequences required to accomplish a job or cope with a particular circumstance (Barbeite & Weiss, 2004). It's also discussed to as people's evaluations of their competence to utilize computers in various conditions (Ghani, Rahi, Yasin, & Alnaser, 2017; Marakas, Yi, & Johnson, 1998). Citizens with a high CSE are more expected to have a affirmative attitude toward technology and computer-related problems and utilize IT-related applications (Compeau, Higgins, & Huff, 1999; Rahi, Ghani, & Muhamad, 2017). As users get more familiar with the system, the impacts of CSE may go away. When users have no prior knowledge of a system, we suggest assessing the computer self is needed. As a result, we believe.

H3: CSE has a direct effect on e-government adoption.

2.4. Trusts on Internet

The idea that now the internet is a trustworthy medium capable of offering safe transactions and accurate information is a perfect example of internet trust (Bélanger & Carter, 2008; Rahi, 2016).When it comes to utilizing Internet technology, citizens may be confused (Lee, Kim, & Ahn, 2011; S. Rahi & M. A. Ghani, 2016). Individuals, especially those who have never used e-government before, will be worried about the security and reliability of online transactions (Rahi, 2015, 2016; Rahi, Ishtiaq, Ali, & Abd Ghani, 2021; T. S. Teo, Srivastava, & Jiang, 2008). Users may use their prior experience with e-commerce to assist them in overcoming their concerns. Consequently, if consumers have a positive experience with innovative technology, they will be less expected to skeptical (Rahi, Ammara, & Qazi, 2021; S. Rahi & M. Ghani, 2016; T. S. Teo et al., 2008). The study create that trust on the Internet is important interpreter of perceived risk.

H4: Trust on Internet will have direct effect on intention to adopt.

2.5. Trust on government

The thought of trust had been researched extensively in different fields the Internet or e-Government, but all area has its clarification (Wang & Emurian, 2005). Many scholars and other observers believe that government trust is dwindling over time (Bovens & Wille, 2008). Various academics, however, have disputed the notion that government trust is eroding in the long run (Cook & Gronke, 2005; Rahi, Zaheer, & Ali, 2021). Government trust has a fluctuating feature, implying that there is some room for negotiation. As a result, an unstable condition is created, indicating that it will rise and fall again over time(Cook & Gronke, 2005; Rahi, Ishtiaq, Farooq, & Alnaser, 2021). Finally, while adopting and using e-government may increase citizens' trust in a government agency's performance.

H5: Trust on government direct effect to adoption e-government.

2.6. Intention to adopt

Various studies have discussed to adopt and usage of electronic government services as intention or willingness (Carter & Bélanger, 2005; Gilbert, Balestrini, & Littleboy, 2004; Rahi & Ghani, 2018a; Warkentin, Gefen, Pavlou, & Rose, 2002). E-government adoption is defined as "the intention to 'engage in e-government,' which includes the intentions to receive

information, contribute information, and request e-government services"(Rahi & Ishaq, 2020; Warkentin et al., 2002). The positive effect adoption of these e-government services is critical for developing country administrations (Gupta, Dasgupta, & Gupta, 2008; Rahi & Ahmad, 2020).

H6: Intention to adopt e-government has an impact on actual usage.

2.7. Degree of openness

DOP can be defined as how expressively exposed and ready a person is to use electronic government in the context of electric governance. In contrast to technology, fear, which influences the degree of openness and ease of usage, may be beneficial (Gelbrich & Sattler, 2014; Rahi, Khan, & Alghizzawi, 2021). Presented technology anxiety as a moderator, defining it as the amount to which a person's spiritual and characteristic preparedness to adjust to change effects their intention to adopt an invention (Algharibi & Arvanitis, 2011; Rahi, Khan, & Alghizzawi, 2020; Rahi, Othman Mansour, Alharafsheh, & Alghizzawi, 2021). Information Systems (IS) research is interested in understanding how and why users embrace and use technology. Technology acceptance theories have proliferated, including the Technology (McCrae & Costa Jr, 1989; Venkatesh & Morris, 2000),

H7: Degree of openness mediating role between intention to adopt and actual usage.

3. METHODOLOGY

The methodologies, as well as the overall research design, have been reviewed. What is the purpose of the study, and is it qualitative or quantitative? Scientists' research methods are their research opinions. These are the norms and agreements that administer how to technique research problems and conduct research (F. M. Alnaser, Ghani, & Rahi, 2019; Creswell & Tashakkori, 2007; Rahi, Alnaser, & Ghani, 2019). These paradigms represent basic research beliefs on how to continue with the study (Rahi, 2017, 2018; Rahi & Ghani, 2018b). The positivist pattern, interpretative method, advocacy/participatory paradigm (Rahi, 2017; Rahi & Ghani, 2018a). The positivist paradigm has been used in this study. This paradigm's adherents think that knowledge may be gained via observation and experimentation (Rahi, 2017). In social skills, the positivism pattern may be more effectively usage (Hirschheim, 1985). This work takes a derivable method because we already have hypothesis developed by researchers, and we are evaluating that theory rather than inducting a new one (Rahi, 2017). As the name implies, the qualitative approach is concerned with quality and is used to gather information about a particular study topic. Unlike quantitative methods, this technique considers a person's sentiments and emotions (Berg & Lune, 2012). We are not creating a new theory in this research; instead, we evaluate an existing approach using statistical tests. Therefore we are not utilizing qualitative methods. This is a scientific method for identifying outcomes by analyzing data statistically (Grinnell Jr & Unrau, 2010). It method extracts innovative or renewed data from the citizens(Bell & Bryman, 2007). The populations need represented in the sample. Individual passions and arrogances are disregarded in this approach. When a hypothesis is being tested, this technique is used. A quantitative approach was used for this study since the research was not about inventing new theories but rather about dealing with and evaluating existing ideas using statistical methods.

4. CONCLUSION

We shall discuss the Citizens' expectations regarding e-Services in this part based on survey results. We've spent most of our time talking about the public's expectations for e-Services in Pakistan.

Pakistan is still a developing country with a mid-range score regarding e-government usage and is new to e-government. However, Pakistani citizens have no effective use of e-Services, indicating that further steps are needed. The general conclusion from the survey analysis and the instance of Pakistan is that people's interest in e-Government is growing, as are their expectations for e-government. The projected e-Services groups are listed below, in order of most demanding to least demanding. Educations sector, Taxations, Utility bill, Passport, Vehicle registrations, Driving Licenses, Government portal, Land records and others. Finally, we came up with the citizen mentioned above expectations for e-Government. This can serve as per a substance for the growth of e-services in Pakistan. The text will make it easier for various readers to deduce information that is relevant to them. The present status of e-government in Pakistan necessitates further in-depth study so that incremental policies may be enacted to take a tangible step toward a well-informed society. In Pakistan, citizens are adopting e-government facilities. It was inspired by the issue of poor citizen uptake of e-government service areas in developing nations. If the community does not utilize e-government services, they will not enhance public service delivery. Such as a result, the main object of this learning is to learn more about the variables that distress people' use of e-government services. Identifying such variables would increase the chances of improving the adoption rate of these services by expanding understanding of the elements that help or impede the adoption process.

LITERATURE:

1. Agarwal, R., & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision sciences, 28*(3), 557-582.
2. Algharibi, A. J., & Arvanitis, T. N. (2011). *Adapting the Unified Theory of Acceptance and Use of Technology (UTAUT) as a tool for validating user needs on the implementation of e-Trial software systems.* Paper presented at the Proceedings of HCI 2011 The 25th BCS Conference on Human Computer Interaction 25.
3. Alnaser, F., Ghani, M., & Rahi, S. (2017). The Impact of SERVQUAL Model and Subjective Norms on Customer's Satisfaction and Customer Loyalty in Islamic Banks: A Cultural Context. *Int J Econ Manag Sci, 6*(5), 455.
4. Alnaser, F., Ghani, M., & Rahi, S. (2018). Service quality in Islamic banks: The role of PAKSERV model, customer satisfaction and customer loyalty. *Accounting, 4*(2), 63-72.
5. Alnaser, F., Ghani, M., Rahi, S., Mansour, M., & Abed, H. (2017). Determinants of Customer Loyalty: The Role of Service Quality, Customer Satisfaction and Bank Image of Islamic Banks in Palestine. *Int J Econ Manag Sci, 6*(461), 2.
6. Alnaser, F. M., Ghani, M. A., & Rahi, S. (2019). The Implementation of Partial Least Square Modelling (PLS) For Marketing Research in Arab Countries: Introduction to Beginner Users-Evidence from Islamic Banks of Palestine. *Economic and Social Development: Book of Proceedings*, 1134-1141.
7. Alnaser, F. M. I., Ghani, M. A., Rahi, S., Mansour, M., & Abed, H. (2017). The Influence of Services Marketing Mix (7 Ps.) and Subjective Norms on Customer's Satisfaction in Islamic Banks of Palestine. *European Journal of Business and Management, 9*(27).
8. Bandura, A. (1986). (1986a). Self-efficacy. In A. Bandura (Ed.), Social foundations of thought and action: A social cognitive theory (pp. 390-453). Englewood Cliffs, NJ: Prentice Hall.
9. Barbeite, F. G., & Weiss, E. M. (2004). Computer self-efficacy and anxiety scales for an Internet sample: testing measurement equivalence of existing measures and development of new scales. *Computers in Human Behavior, 20*(1), 1-15.
10. Bélanger, F., & Carter, L. (2008). Trust and risk in e-government adoption. *The Journal of Strategic Information Systems, 17*(2), 165-176.

11. Bell, E., & Bryman, A. (2007). The ethics of management research: an exploratory content analysis. *British Journal of Management, 18*(1), 63-77.
12. Berg, B. L., & Lune, H. (2012). *Qualitative research methods for the social sciences* (Vol. 8): Pearson Boston, MA.
13. Bovens, M., & Wille, A. (2008). Deciphering the Dutch drop: Ten explanations for decreasing political trust in the Netherlands. *International review of administrative sciences, 74*(2), 283-305.
14. Carter, L., & Bélanger, F. (2005). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information systems journal, 15*(1), 5-25.
15. Chau, P. Y., & Hu, P. J. (2002). Examining a model of information technology acceptance by individual professionals: An exploratory study. *Journal of management information systems, 18*(4), 191-229.
16. Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS quarterly*, 145-158.
17. Cook, T. E., & Gronke, P. (2005). The skeptical American: Revisiting the meanings of trust in government and confidence in institutions. *The Journal of Politics, 67*(3), 784-803.
18. Creswell, J. W., & Tashakkori, A. (2007). Developing publishable mixed methods manuscripts: Sage Publications Sage CA: Los Angeles, CA.
19. Gauld, R., Goldfinch, S., & Horsburgh, S. (2010). Do they want it? Do they use it? The 'Demand-Side'of e-Government in Australia and New Zealand. *Government Information Quarterly, 27*(2), 177-186.
20. Gelbrich, K., & Sattler, B. (2014). Anxiety, crowding, and time pressure in public self-service technology acceptance. *Journal of Services Marketing*.
21. Ghani, M. A., Rahi, S., Yasin, N. M., & Alnaser, F. M. (2017). Adoption of Internet Banking: Extending the Role of Technology Acceptance Model (TAM) with E-Customer Service and Customer Satisfaction. *World Applied Sciences Journal, 35*(9), 1918-1929.
22. Gilbert, D., Balestrini, P., & Littleboy, D. (2004). Barriers and benefits in the adoption of e-government. *International Journal of Public Sector Management*.
23. Grinnell Jr, R. M., & Unrau, Y. A. (2010). *Social work research and evaluation: Foundations of evidence-based practice*: Oxford University Press.
24. Gupta, B., Dasgupta, S., & Gupta, A. (2008). Adoption of ICT in a government organization in a developing country: An empirical study. *The Journal of Strategic Information Systems, 17*(2), 140-154.
25. Hirschheim, R. (1985). Information systems epistemology: An historical perspective. *Research methods in information systems, 9*, 13-35.
26. Kent, S., & Millett, L. (2003). Who Goes There? Authentication Through the Lens of Privacy, Committee on Authentication Technologies and Their Privacy Implications, National Research Council. *Washington, DC: National Research Council, National Academics Press. Retrieved July, 28*, 2006.
27. Lee, J., Kim, H. J., & Ahn, M. J. (2011). The willingness of e-Government service adoption by business users: The role of offline service quality and trust in technology. *Government Information Quarterly, 28*(2), 222-230.
28. Marakas, G. M., Yi, M. Y., & Johnson, R. D. (1998). The multilevel and multifaceted character of computer self-efficacy: Toward clarification of the construct and an integrative framework for research. *Information systems research, 9*(2), 126-163.
29. McCrae, R. R., & Costa Jr, P. T. (1989). Rotation to maximize the construct validity of factors in the NEO Personality Inventory. *Multivariate Behavioral Research, 24*(1), 107-124.

30. Mellor, N. (2006). *E-citizen: Developing research-based marketing communications to increase awareness and take-up of local authority e-channels.* Paper presented at the Aslib proceedings.
31. Mišutka, J., & Galamboš, L. (2011). *System description: Egomath2 as a tool for mathematical searching on wikipedia. org.* Paper presented at the International Conference on Intelligent Computer Mathematics.
32. Mndzebele, N. (2013). The effects of relative advantage, compatibility and complexity in the adoption of EC in the hotel industry. *International Journal of Computer and Communication Engineering, 2*(4), 473.
33. Ondego, B., & Moturi, C. (2016). Evaluation of the Implementation of the e-Citizen in Kenya. *Evaluation, 10*(4).
34. Rahi, S. (2015). Moderating role of brand image with relation to internet banking and customer loyalty: a case of branchless banking. *The Journal of Internet Banking and Commerce*, *20*(3).
35. Rahi, S. (2016). Impact of Customer Perceived Value and Customers Perception of Public Relation on Customer Loyalty with Moderating Role of Brand Image. *The Journal of Internet Banking and Commerce*, *21*(2), ---.
36. Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), 1-5.
37. Rahi, S. (2018). Examining the Effects of Travel Constraints, Tourist Satisfaction and Website Image on Tourist Loyalty in Developing Countries Context. *Economic and Social Development: Book of Proceedings*, 478-487.
38. Rahi, S., & Abd. Ghani, M. (2018). The role of UTAUT, DOI, perceived technology security and game elements in internet banking adoption. *World Journal of Science, Technology and Sustainable Development, 15*(4), 338-356. doi: doi:10.1108/WJSTSD-05-2018-0040
39. Rahi, S., & Abd. Ghani, M. (2019a). Does gamified elements influence on user's intention to adopt and intention to recommend internet banking? *International Journal of Information and Learning Technology, 36*(1), 2-20. doi: doi:10.1108/IJILT-05-2018-0045
40. Rahi, S., & Abd. Ghani, M. (2019b). Integration of expectation confirmation theory and self-determination theory in internet banking continuance intention. *Journal of Science and Technology Policy Management, 10*(3), 533-550. doi: 10.1108/jstpm-06-2018-0057
41. Rahi, S., & Abd. Ghani, M. (2019c). Investigating the role of UTAUT and e-service quality in internet banking adoption setting. *The TQM Journal, 31*(3), 491-506.
42. Rahi, S., & Abd.Ghani, M. (2019). Integration of DeLone and McLean and self-determination theory in internet banking continuance intention context. *International Journal of Accounting & Information Management, 27*(3), 512-528. doi: 10.1108/ijaim-07-2018-0077
43. Rahi, S., Abd.Ghani, M., & Hafaz Ngah, A. (2019). Integration of unified theory of acceptance and use of technology in internet banking adoption setting: Evidence from Pakistan. *Technology in Society, 58*, 101120. doi: https://doi.org/10.1016/ j.techsoc.2019.03.003
44. Rahi, S., & Ahmad, S. (2020). *Investigating the role of employee readiness to change on effective organizational change implementation: a theoretical perspective.* Paper presented at the Economic and Social Development (Book of Proceedings), 52nd International Scientific Conference on Economic and Social Development.
45. Rahi, S., Alnaser, F. M., & Ghani, M. A. (2019). Designing Survey Research: Recommendation for Questionnaire Development, Calculating Sample Size and Selecting Research Paradigms. *Economic and Social Development: Book of Proceedings*, 1157-1169.

46. Rahi, S., Ammara, U. E., & Qazi, T. F. (2021). THE IMPACT OF ADVERTISEMENT ON CUSTOMER LOYALTY WITH MEDIATING ROLE OF WORD OF MOUTH (WOM). *Economic and Social Development: Book of Proceedings*, 224-229.
47. Rahi, S., & Ghani, M. (2016). Internet Banking, Customer Perceived Value and Loyalty: The Role of Switching Costs. *J Account Mark, 5*(4), 188. doi: 10.4172/2168-9601.1000188
48. Rahi, S., Ghani, M., Alnaser, F., & Ngah, A. (2018). Investigating the role of unified theory of acceptance and use of technology (UTAUT) in internet banking adoption context. *Management Science Letters, 8*(3), 173-186.
49. Rahi, S., Ghani, M., & Muhamad, F. (2017). Inspecting the Role of Intention to Trust and Online Purchase in Developing Countries. *J Socialomics 6*(1). doi: 10.41 72/2167-0358.1000191
50. Rahi, S., Ghani, M., & Ngah, A. (2018). A structural equation model for evaluating user's intention to adopt internet banking and intention to recommend technology. *Accounting, 4*(4), 139-152.
51. Rahi, S., & Ghani, M. A. (2016). Customer's Perception of Public Relation in E-Commerce and its Impact on E-Loyalty with Brand Image and Switching Cost. *Journal of Internet Banking and Commerce, 21*(3).
52. Rahi, S., & Ghani, M. A. (2018a). *Investigating the Role of E-Service Quality and Brand Image in Internet Banking Acceptance Context with Structural Equation Modeling (SEM-PLS).* Paper presented at the Economic and Social Development (Book of Proceedings), 30th International Scientific Conference on Economic and Social.
53. Rahi, S., & Ghani, M. A. (2018b). *A Structural Equation Modeling (SEM-AMOS) for Investigating Brand Loyalty and Customer's Intention towards Adoption of Internet Banking* Paper presented at the Economic and Social Development (Book of Proceedings), 29th International Scientific Conference on Economic and Social.
54. Rahi, S., Ghani, M. A., & Alnaser, F. M. (2017). The Influence of E-Customer Services and Perceived Value on Brand Loyalty of Banks and Internet Banking Adoption: A Structural Equation Model (SEM). *The Journal of Internet Banking and Commerce, 22*(1), 1-18.
55. Rahi, S., Ghani, M. A., & Ngah, A. H. (2020). Factors propelling the adoption of internet banking: the role of e-customer service, website design, brand image and customer satisfaction. *International Journal of Business Information Systems, 33*(4), 549-569. doi: 10.1504/ijbis.2020.105870
56. Rahi, S., & Ishaq, M. (2020). *Factors Influencing online Shopping behavior With Mediating Role of Customer Perceived Value.* Paper presented at the Economic and Social Development: Book of Proceedings.
57. Rahi, S., Ishtiaq, M., Ali, H. F., & Abd Ghani, M. (2021). WHAT LEADS TO BRAND HATE? ANTECEDENTS AND OUTCOMES OF BRAND HATE. *Economic and Social Development: Book of Proceedings*, 31-41.
58. Rahi, S., Ishtiaq, M., Farooq, W., & Alnaser, F. (2021). *EXAMINING FACTORS INFLUENCE INDIVIDUAL BEHAVIOUR TO CONTINUE USE OF MOBILE SHOPPING APPS WITH THE INTEGRATION OF TECHNOLOGY ACCEPTANCE MODEL AND BRAND AWARENESS.* Paper presented at the Economic and Social Development (Book of Proceedings), 7th ITEM Conference-" Innovation, Technology, Education and.
59. Rahi, S., Khan, M. M., & Alghizzawi, M. (2020). Extension of technology continuance theory (TCT) with task technology fit (TTF) in the context of Internet banking user continuance intention. *International Journal of Quality & Reliability Management, 38*(4), 986-1004. doi: 10.1108/ijqrm-03-2020-0074

60. Rahi, S., Khan, M. M., & Alghizzawi, M. (2021). Factors influencing the adoption of telemedicine health services during COVID-19 pandemic crisis: an integrative research model. *Enterprise Information Systems*, *15*(6), 769-793. doi: 10.1080/17517575.2020.1850872
61. Rahi, S., Othman Mansour Majeed, M., Alghizzawi, M., & Alnaser Feras, M. (2019). Integration of UTAUT model in internet banking adoption context: The mediating role of performance expectancy and effort expectancy. *Journal of Research in Interactive Marketing*, *13*(3), 411-435. doi: 10.1108/jrim-02-2018-0032
62. Rahi, S., Othman Mansour, M. M., Alharafsheh, M., & Alghizzawi, M. (2021). The post-adoption behavior of internet banking users through the eyes of self-determination theory and expectation confirmation model. *Journal of Enterprise Information Management, ahead-of-print*(ahead-of-print). doi: 10.1108/jeim-04-2020-0156
63. Rahi, S., Zaheer, M., & Ali, H. F. (2021). *IMPACT OF ENTREPRENEURSHIP EDUCATION ON ENTREPRENEURIAL INTENTION WITH MEDIATING ROLE OF DESIRE FOR SUCCESS.* Paper presented at the Economic and Social Development (Book of Proceedings), 72nd International Scientific Conference on Economic and Social.
64. Richter, P., Cornford, J., & McLoughlin, I. (2004). The e-Citizen as talk, as text and as technology: CRM and e-Government. *Electronic Journal of e-government*, *2*(3), 207-218.
65. Robinson, L. (2012). *Changeology: how to enable groups, communities and societies to do things they've never done before*: Green Books Cambridge.
66. Rogers, E. (1983). M.(1983). *Diffusion of innovations*.
67. Rogers, E. (1995). Diffusion of Innovation. Free press, New York.
68. Rogers, E. M. (2003). Diffusion of innovations. Free Press. *New York*, *551*.
69. Samar, R., & Mazuri, A. G. (2019). Does gamified elements influence on user's intention to adopt internet banking with integration of UTAUT and general self-confidence? *International Journal of Business Excellence*, *19*(3), 394-414.
70. Samar, R., Norjaya, M. Y., & Feras, M. A. (2017). Measuring the role of website design, assurance, customer service and brand image towards customer loyalty and intention to adopt interent banking. *The Journal of Internet Banking and Commerce*, *22*(S8).
71. Samar, S., Ghani, M., & Alnaser, F. (2017). Predicting customer's intentions to use internet banking: the role of technology acceptance model (TAM) in e-banking. *Management Science Letters*, *7*(11), 513-524.
72. Shahzad, H., & Sandhu, W. Y. (2007). E-government services in Pakistan.
73. Tat-Kei Ho, A. (2002). Reinventing local governments and the e-government initiative. *Public administration review*, *62*(4), 434-444.
74. Teo, T. (2009). Examining the Relationship between Student Teachers' Self-Efficacy Beliefs and Their Intended Uses of Technology for Teaching: A Structural Equation Modelling Approach. *Turkish Online Journal of Educational Technology-TOJET*, *8*(4), 7-15.
75. Teo, T. S., Srivastava, S. C., & Jiang, L. (2008). Trust and electronic government success: An empirical study. *Journal of management information systems*, *25*(3), 99-132.
76. Tolba, A. H., & Mourad, M. (2011). Individual and cultural factors affecting diffusion of innovation. *Journal of International Business and Cultural Studies*, *5*, 1.
77. Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS quarterly*, 115-139.
78. Wang, Y. D., & Emurian, H. H. (2005). An overview of online trust: Concepts, elements, and implications. *Computers in Human Behavior*, *21*(1), 105-125.
79. Warkentin, M., Gefen, D., Pavlou, P. A., & Rose, G. M. (2002). Encouraging citizen adoption of e-government by building trust. *Electronic markets*, *12*(3), 157-162.

ADOPTION OF ONLINE PAYMENTS DURING THE COVID-19 PANDEMIC

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ABSTRACT

The COVID-19 pandemic has restricted the free movement of people, which in turn has reduced the exchange of information, goods, services and capital on a global scale. On the other hand, it has led to the discovery or increased use of innovative and digital solutions to alleviate difficulties in various spheres of life. The objective of this paper is to examine the changes in the trends of adoption and usage of online payment systems to identify the differences in the adoption of online payment services in different geographical areas. This paper presents results of the recent findings that address the adoption of digital payment services in the context of the COVID -19 pandemic and highlights the factors that influence the adoption of online payments. Significant differences were found across geographic regions in the adoption of online payment methods and intentions to use them following the COVID -19 pandemic. As in previous research, perceived benefits and risks were among the most important constants for the use of online payments, but recently the risk of virus transmission through cash transactions became more important. The findings may be useful to other researchers and financial institutions in developing and promoting online payment systems and selecting key factors to increase the adoption of online payments across regions.

Keywords: *COVID-19, digital payments, e-commerce, online payment adoption*

1. INTRODUCTION

The restrictions in social interactions emerged as of COVID-19 virus pandemic made it impossible to carry out daily activities in the usual dynamic. This affected the necessary changes in the daily behaviour and work of people and companies, who had to adapt and find ways to cope under the restrictive circumstances. As a result, innovative solutions are being introduced and online activities are increasing. This includes online purchases and digital payments, the volume of which has increased in previous periods, but especially since the introduction of the first restrictions (FIS Worldpay, 2021; Mišić, 2021). In addition to avoiding physical contact, there was a need to reduce the possibility of transmitting the infection by using the same items, such as banknotes (Ojo D Delaney, 2021; Kaur et al., 2021), which led to an avoidance of the use of cash (Heikkinen, Välimäki, 2021; Sintonen et al., 2021) and a higher adoption of FinTech services (Pinshi, 2021). Therefore, financial institutions and companies in the payments industry have changed their operating models and services with the aim of providing the best solutions to their customers (Khan et al., 2017). In this effort, they have reduced or eliminated fees for payment services (de Girancourt, 2020), increased the card payment limit without PIN identification, increased the number of devices and cards with contactless payment capability, and continued the rapid development of digital payment tools and functionalities (de Girancourt, 2020; Ojo D Delaney, 2021) to ensure the continuity of offline and online services. Therefore, the COVID -19 virus pandemic had a far-reaching impact on global payments and lasting effects on the financial industry with an accelerated shift to online payments (Jayan, Xavier, 2020) and forced a proactive approach in offering new innovative and digital services. (McKinsey, 2020; Statista, 2021a) For example, as early as 2020, 50% of SME respondents in the McKinsey Global Payments survey said they preferred online purchases (McKinsey, 2020) and 48% of respondents in the US and 68% in the UK in the Statista Global Consumer Survey agreed that they ordered more online than before because

of COVID -19. The objective of this paper is to identify the differences in global online payment penetration and to identify the specificities between different geographical areas and identify in which areas it is possible and necessary to take additional measures to reduce the existing differences in the use of digital payment methods. To identify and analyse the global online payment trends during the period COVID -19, the results of various reports and surveys such as Statista reports on digital payments and Fintech, FIS Worldpay, Global Payments Report 2021, Finance EY, The 2020 Mc Kinsey Global payments report, Eurostat data etc. were analysed. The data provides insights on digital payments at global level and in selected countries. For countries with a significant impact on global outcomes, such as China, India, the US and Germany, a specific analysis is performed.

2. LITERATURE REVIEW

According to a survey conducted by Deloitte in the first half of 2020, the use of online payment services has increased. During this period, 9% of respondents for the first time used this service and only 9% exclusively used non-digital payments (Deloitte AG, n.d.). According to Deloitte, two-thirds of first-time users of digital payments say they plan to continue using them at least some of the time, which is consistent with the findings of Santosa (2021) et al. A minority (likely older customers) who were not satisfied with their experience of online payments are likely to return to cash (Deloitte AG, n.d.). In an analysis of the main reasons for non-adoption of digital payments in India, KPMG (2020) finds that the reluctance to adopt digital payments is due to lack of awareness, availability of infrastructure, technical issues and cost (KPMG, 2020). Wisniewski and co-authors, based on a survey of 5,504 respondents from 22 European countries, claim that a preference for anonymity, the shadow economy where employees receive their salary in physical currency, and a lack of knowledge in using mobile apps are barriers to the use of cashless instruments (Wisniewski, et al. 2021). Toh and Tran (2020) claim that exclusion from digital payments is due to financial exclusion (lack of financial account) and digital exclusion (lack of internet access at home), which account for 17% of exclusion from digital payments in the US (Toh, Tran, 2020). Variables affecting the adoption of digital payment systems are related to the psychological dimension, perceived benefits and perceived risk, which negatively affects the intention to use digital payment services (Liébana-Cabanillas et al., 2018a), especially among the elderly population (Jayan, Xavier, 2020). Here, security plays a key role, as insecure online payment systems are not trusted and will not be used, as the risk or perceived security negatively affects the adoption of digital payments and reduces the likelihood of using digital payments (Liébana-Cabanillas, 2020; Musyaffi et al., 2021). Data security is the implementation of methods, technologies, and practises that ensure that data is protected from alteration or unintended change (integrity) and unauthorised access (confidentiality) (Khan, et al., 2017). Perceived risk is an important factor in the adoption of digital payments in countries with a high CMSI score (India) as opposed to countries with a low CMSI score (USA), suggesting that culture may play a role in the adoption of e-commerce and payment technologies. (Chopdar et al., 2018). In the EU, the percentage of people who have not shopped online in 2019 due to payment security concerns (age group 16-74) is 6%, with Portugal leading the way at 23%. In Estonia, this percentage is low at only 1%, as trust seems to be quite high. There is some improvement as this indicator was 11% at EU level in 2009 (Eurostat, 2020). According to KPMG research in Australia, consumers believe that banks (47%) are the sector they trust most when it comes to protecting their data and privacy, followed by government (26%), payment providers (16%), retailers (4%), etc. (KPMG, Australia, 2019). Nonetheless, according to a study conducted in Canada in April-July and November 2020, users' level of caution about online security has generally decreased, in terms of shopping only on reputable websites and storing credit card and personal information on websites.

Improvement was noted in the use of stronger passwords or passphrases and the use of third-party payment services (e.g., Pay Pal) (Chen et al., 2021). The development of online payment services by the banking sector and third-party financial services requires stronger regulation of customer authentication, sensitive data processing, and transaction monitoring (Martyniuk et al., 2016), with the aim of strengthening the efficiency and security as well as the diversity and quality of payment services. Trustworthy, efficient and open payment systems are the basis for the acceptance and development of new, innovative FinTech solutions, which must comply with European legislation (Heikkinen, Vaelimaeki, 2021). Therefore, the development of RegTech is even more important as it enables regulators to monitor the online banking transactions (Dubey et al., 2020). The percentage of the population using digital banking and payments will reach 13% globally by 2030. Therefore, building a strong, regulated and secure digital infrastructure is necessary for FinTech to gain widespread adoption. (Pinshi, 2021) Online transactions use various payment methods such as: Credit cards, debit cards, bill or online payment providers such as PayPal, AliPay etc. PayPal is the most popular brand among online payment providers in the US, UK and Germany, while Alipay, Wechat Pay and UnionPay are the most popular in China. Therefore, regulators need to keep up with the latest advances in FinTech to monitor online activities (Pinshi, 2020; Dubery at al. 2020). Also, the importance of users' digital and financial literacy is now even more important (Heikkinen, Vaelimaeki, 2021; Jayan, Xavier, 2020), as it contributes to safer transactions and the spread of digital payments, while a lack of digital literacy, on the other hand, is a barrier to the use of digital payment methods (Siby, 2021; Wisniewski: 2021). Although new technologies allow banks to reduce operating costs by offering more internet services (HNB, 2020), there is a constant need for investment in technology to keep up with new, more flexible providers of digital financial services (Bračun, Turkalj, 2020), and data security as one of the new challenges in the digital space. European banks will need to ensure strong security controls and prepare for the new client authentication requirements that is set out in the revised EU Payment Services Directive. While banks must inform their customers about digital financial services, they cannot be responsible for customers' internet access, digital skills or financial literacy. This means that new customers need to be able to follow technological advances and banks can help provide information and knowledge, especially for older (Santosa, 2021) and disadvantaged customers. To use innovative technologies these customers will need assistance provided by financial institutions (Luković, 2021), but the question is the cost-effectiveness of these measures in everlasting cost reduction struggle. Customers of the future will demand that financial institutions and companies simplify the conduct of financial transactions, protect customers' funds, identity and data and understand their needs. Therefore, the future will bring adaptive banking, where banks will be able to meet customers' preferences depending on the occasion, time and context. This will inevitably lead to the need to increase customers' digital and financial literacy (KPMG, Australia, 2019).

3. ANALYSIS OF THE GLOBAL PAYMENT TRENDS

E-commerce is one of the biggest generators of digital payments. Its share in 2020 and projected growth in 2025 by region are as follows: Asia Pacific with an expected average annual growth of 10% (share of 51% in 2020 with a growth forecast to 61% by 2025), North America with an expected average annual growth of 6% (from 20% in 2020 to 26% in 2025), Europe with an expected average annual growth of 3% (from 16% in 2020 to 19% in 2025), the Latin America region (from 11% in 2020 to 13% in 2025), the Middle East and Africa (7% to 10%), which show potential for further penetration of online payments. E-commerce in the leading Asia-Pacific region accounted for half of total retail sales in 2020 (Coppola, 2021, according to Edge by Ascential, 2020).

According to research conducted by EY, across 27 markets worldwide, in the FinTech structure, money transfer and payments have been the top service over the years, growing from 18% in 2015 to 75% in 2019, followed by insurance (48%), savings and investments (34%), budgeting and financial planning (29%), and borrowing (27%) (Statista, 2021b, p. 8 according to Finance EY, Global Fintech Adoption Index 2019, 2019). Growth in average weekly time spent using financial apps by country during COVID-19 in 2020 was in Japan 55%, South Korea 35%, US 20%, China 20%, Germany 15%, Italy 15%, UK 5% (Statista Research Department, 2020a according to Payments Card and Mobile LLP, 2020, Digital and Card Payment Yearbook). Global digital commerce and mobile POS payments are forecast to grow 14.05% annually by transaction value, from US$5,474.6 billion in 2020 to US$10,520.2 billion by 2025, with digital commerce growing from US$3,466.6 billion to US$5,869.7 (at an average annual growth rate of 11.12%), while mobile POS payments will see even higher growth, from US$2,008 billion to US$4,650.6 billion (average annual growth rate of 18.34%). The strongest growth will be achieved in 2021 (22.11%), followed by a decline in growth rates in the following years (Statista, 2021c). Table 1 shows a regional comparison of the transaction value in 2020 and the forecast for 2025, showing the regions Europe, USA and China.

Table 1: Regional comparison of transaction value in 2020 and forecast for 2025.[1]

Transaction value in billion US$

Region	Transaction*	2020	Forecast 2025	Average annual growth rate
Europe	Digital commerce	674.3	1,129.5	
	Mobile POS payments	244.6	825.2	
	Total	**918.9**	**1,954.7**	**16.30%**
US	Digital commerce	663.2	1092.3	
	Mobile POS payments	372.2	1,006.2	
	Total	**1,035.4**	**2,098.5**	**15.20%**
China	Digital commerce	1,352.4	2,016.9	
	Mobile POS payments	1,144.0	2,221.3	
	Total	**2,496.4**	**4,238.2**	**11.20%**

Source: Author's adaptation (according to Statista 2021c, p.7)

According to the forecast, digital commerce payments and mobile POS payments will achieve the highest average annual growth rate in Europe (16.3%), although China will maintain the leading position by transaction value. Table 2 shows Statista's findings on the usage of selected payment methods on a global level, with a forecast for 2024 by method.

Table following on the next page

[1] In this report Digital payments are including Digital commerce (digital payments made via the Internet related to online shipping using different payment methods (credit cards, direct debit, invoice, or online payment providers, such as PayPal and Alipay) and Mobile POS payments (so-called "mobile wallets" Apple Pay and Samsung Pay) (Statista, 2021c: p. 22).

Table 2: Share of selected payment methods as a percentage of total e-commerce transaction volume worldwide in 2020, with a forecast for 2024

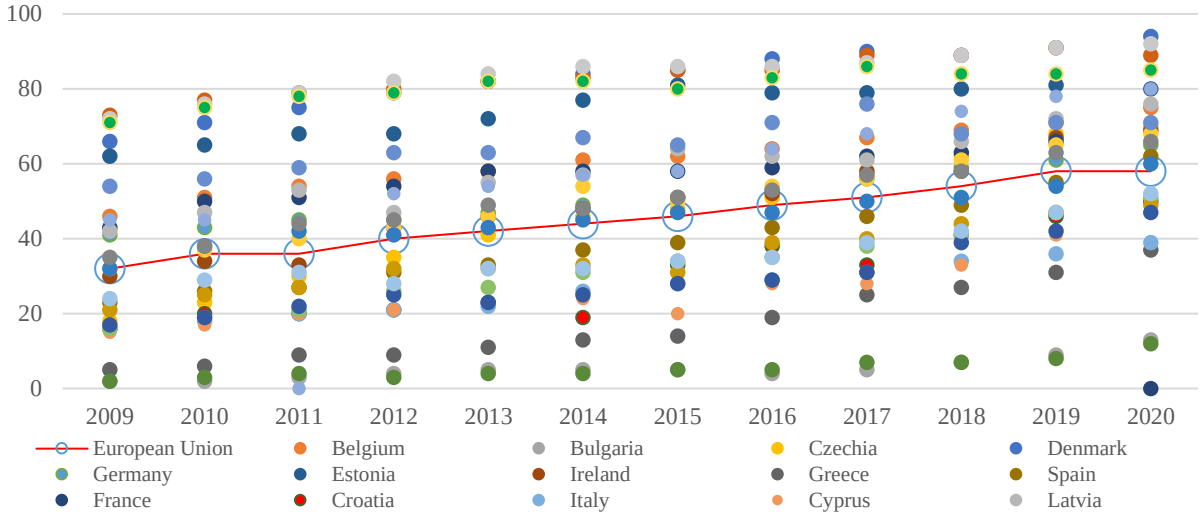
selected payment method	Worldwide		North America	Latin America	Europe	Asia Pacific	Middle East and Africa
	2020	Projection - 2024	2020	2020	2020	2020	2020
Digital / mobile wallet	44.50%	51.7%	29.30%	19.80%	26.40%	60.20%	14.40%
Credit card	22.80%	20.8%	32%	36.50%	18.90%	19.10%	28%
Debit card	12.80%	12%	20.10%	16.30%	18.80%	5.80%	13.80%
Bank transfer	7.70%	5.3%	5.80%	9.50%	13%	6.50%	15%
Cash on delivery	3.30%	1.7%	0.70%	5.50%	3.30%	4.10%	16.40%
Charge & deferred debit card	3.30%	1.6%	7.40%	2.60%	4.60%	0.80%	3.40%
Buy now pay later	2.10%	4.2%	1.60%	0%	7.40%	0.60%	-
Direct Debit	1.20%	1%	0.80%	1.30%	4%	0.30%	1.80%
Pre-paid card	1.10%	0.5%	0.90%	1.40%	1.20%	1.10%	4%
Post-pay	0.90%	0.5%	0.90%	5.40%	0.10%	1%	-
Pre-pay	0.40%	0.2%	0.40%	0.80%	1.10%	0.20%	1.80%
Other	0.40%	0.4%	-	0.80%	1.20%	0.30%	1.30%

Source: Author's adaptation (according to Statista, 2021d, p. 9 according to FIS Worldpay, Global Payments Report 2021, pp. 9-29)

Table 2 shows the results of Worldpay's research of selected payment methods worldwide in 2020, broken down by region. In 2021, Asia-Pacific leads in the share of Digital / mobile wallets usage in the total e-commerce volume, followed by North America and Europe (Statista, 2021d according to FIS Worldpay, Global Payments Report 2021). Digital wallets are the most widely used e-commerce payment method globally, accounting for 44.5% of e-commerce transactions in 2020 (that is growth by 6.5% in terms of volume in 2019), with projections for further growth to 51.7% in 2024. This payment method accounts for 72.1% of Chinese e-commerce transactions, 29.3% in the U.S. in 2020 and 26.4% in Europe of Europeans use digital/mobile wallets as their preferred payment method for e-commerce in 2020 and 30% of US citizens (Statista, 2021f; Statista, 2021g according to FIS Worldpay, Global Payments Report 2021, 2021). Together with credit and debit cards, digital wallets will account for 84.5% of e-commerce spending by 2024 (FIS Worldpay, 2021). During the height of the pandemic, e-commerce increased as a share of total purchases compared to the pre-pandemic period, with some fluctuation over the period. The top online purchases were for drugstore products, with a share of total purchases in March 2020, April 2020, and January 2021 of 13%, 16%, and 14%, respectively, and grocery stores at 7%, 10%, and 9%, respectively (Statista, 2021e according to Mastercard Economics Institute, 2021). In 2020, the emphasized differences in shopping behavior between regions and age groups narrowed as older age groups, as to COVID-19, turned to e-commerce and online payments (McKinsey and Company, 2020). In the EU, 58% of respondents from the 16-75 age group used the internet for internet banking in 2020 (Eurostat, 2021), with the structure by country shown in Graph 1 for the 28 countries in 2013-2020 and 27 countries in 2021 as of Brexit.

Graph following on the next page

Graph 1: Individuals using the internet for internet banking (2009 to 2020)



Note: for France there were no data available for 2021
Source: Author's work (according to Eurostat, 2021)

Graph 1 shows significant differences in internet banking penetration across the EU as Romania, Bulgaria, Greece are countries where internet banking is not preferred method of internet use unlike Denmark, Finland and Netherlands. As well, there are significant differences in internet banking penetration, starting from 12% (Romania) to 94% (Denmark). In a survey on the type of online payments made in Germany in 2021 (in the last 12 months) on a sample of 3,096 respondents in the age group 18-64, 73% of respondents used online payments (e.g. PayPal, Amazon Pay), 57% paid by invoice, 51% by direct debit, 37% by credit card, 31% by debit card, 28% with prepaid cards (vouchers), 20% by prepayment, 6% by cash on delivery, 2% by other and 4% of respondents did not make any online payments (Statista, 2021h). In Asia Pacific in 2020, digital or mobile wallets were the most commonly used e-commerce payment methods at 60.2%, credit cards accounted for 19.1%, bank transfers 6.5% and cash on delivery payments 4.1%. In 2024, digital or mobile wallets are predicted to increase to a 65.4% share of total e-commerce payments (Statista Research Department, 2021a according to Worldpay, 2021, Global Payments Report 2021, page 17). In Visa's study conducted on a sample of 7,526 respondents in the 18-65 age group on the distribution of preferred payment methods in Southeast Asia in 2020, 13.33% of respondents used mobile (contactless) or card payments online. (Statista Research Department, 2021b according to Visa Inc. 2020) Considering China as a leading country in e-commerce and online payments, according to the conducted research, the penetration rate of online payments is 86.4% and mobile payments is 83%, with 74% of respondents using mobile payments daily. Digital payments are mainly used for living expenses (94.9%), transportation (79.2%), utilities (77.4%) and loan repayment (68.78%). The top security concerns for using mobile payments, that are one of the main obstacles in using digital payments methods (Liébana-Cabanillas, 2020; Musyaffi et al., 2021), in China in 2020 are: Disclosure of private information (79%), scanning a fake QR code (69.7%), or account balance fraud (66.8%) (Slotta 2021 according to Sina.com 2021). According to the results of a survey conducted in India on 8,623 respondents on the impact of the Coronavirus (COVID -19) and the lockdown on preferred payment methods it was found that 42% of respondents have started making more digital payments since the Covid outbreak and 46% of respondents have increased their use of digital payment apps (Pytm, Phonepe, Gpay, etc.). Majority of the respondents are using digital payments for buying groceries, medicines in retail stores (35%), groceries and medicines online (25%), mobile recharge (12%), taxi/transportation services, food delivery, restaurants and other services (5%, 3%, 1% and 8%

respectively), while 11% of the respondents are not using digital payments. Statista Research Department, 2021d according to LocalCircles, 2020). After the COVID-19 virus pandemic, 53% of respondents will maintain their former habits, 33% will use more digital payments and less cash, and 9% intend to use only digital payments and no cash (LocalCircles, 2020). According to a study conducted by KPMG in India across different demographic groups (2376 respondents, 20 years and above), since the coronavirus pandemic (COVID -19) in 2020, the preferred mode of payment by gender for UPI and online wallets is 47% female; 50% male; credit and debit cards 39% female and 36% male and the rest cash. (Statista Research Department, 2021c according to KPMG, 2020). A survey conducted in 21 African countries in 2021 among the population aged 15 years and above found that cash is still the most popular means of payment. In Morocco, Egypt and Kenya, cash was the most commonly used payment method for online retail, accounting for 74%, 60% and 40% of total payments respectively. Here, 35% of e-commerce payments were made by card and 21% by bank transfer. In Nigeria, however, cash was not as widely used. In South Africa, most digital shoppers used card-based payments (43%) and e-wallets (20%) (Varrella, 2021, adapted from Kemp et al., 2021). The high level of cash usage is a result of the high proportion of informal economic transactions. For online purchases, customers use cash on delivery payment options. Nevertheless, e-commerce and mobile payments are increasing in recent years. This is due to demographic trends and increasing internet penetration. The number of online shoppers in Africa is expected to increase in the coming years and exceed 476 million by 2024. Kenya is a leading country in the use of online payment services in 2021, where 26.1% of respondents use online shopping or payments, followed by Namibia and Gabon with a share of 18.3% and 17.2% respectively. Nigeria at 6.3% and Mali at 5.7% are the countries at the bottom of the list of the proportion of the population reporting making online purchases or paying bills online in selected African countries in 2021 (Varrella, 2021, adapted from Kemp et al., 2021).

4. CONCLUSION

The penetration of digital payment methods varies across continents and countries. While some countries, such as China, lead in the share of digital payment methods, others, particularly African, Middle East and Latin American countries, still lag behind. There are also significant differences between countries in their preferences for using digital banking services. In the EU, for example, in some countries such as Romania and Bulgaria use of internet banking is at low 12-13%, compared to 94% and 92% in Denmark and Finland respectively. There are also significant differences between countries in Africa: Nigeria and South Africa lead in digital payments methods, while cash is still the dominant payment method in Morocco and Egypt. The belief that cash transactions are associated with a higher COVID -19 risk of infection influences customers' willingness to make such transactions and even affects their future intentions. Therefore, this risk of virus transmission through cash transactions, together with the perceived benefits and perceived security of the transactions, is one of the main reasons that need to be analyzed in the future regarding the adoption and use of online payments. At the same time, the question is whether customers will continue to use online payment methods to a greater extent after the pandemic. Here, too, there are major differences: In more developed countries, customers are willing to maintain their online payment habits, while in India and Africa there is a greater propensity to use cash payments and to return to the prevailing cash payments after a pandemic. Therefore, these regions, as well as Latin America and some European countries, have the potential for a proactive approach and further penetration of digital payments contributing to the expected growth, especially in digital wallet transactions. As the aim of this work is to analyze the available data on the use of digital payments since the introduction of the first measures to contain the spread of the COVID -19 virus, the limitations of this research are the availability of more detailed data on the studies conducted, the

inconsistent study periods and methodology, which makes it difficult to compare the results obtained and draw more concrete conclusions. Future work should analyze in more detail the differences in the acceptance of online payment methods at a geographical level.

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LITERATURE:

1. Bračun, S., Turkalj, K. (2020). Utjecaj fin-tech kompanija na digitalnu transformaciju bankarstva u Republici Hrvatskoj. *Obrazovanje za poduzetništvo-E4E: znanstveno stručni časopis o obrazovanju za poduzetništvo*, 10(2), (p. 78-91).
2. Chen, H., Engert, W., Felt, M. H., Huynh, K., Nicholls, G., O'Habib, D., Zhu, J. (2021). *Cash and COVID-19: The impact of the second wave in Canada*. Discussion Papers No. 2021-12. Bank of Canada.
3. Chopdar, P.K., Korfiatis, N., Sivakumar, V.J., Lytras M.D. (2018). Mobile shopping apps adoption and perceived risks: A cross-country perspective utilizing the Unified Theory of Acceptance and Use of Technology. *Computers in Human Behavior* 86, (p. 109-128).
4. Coppola, D. (2021). *Regional e-commerce share of retail in 2020, with a forecast for 2025*. Statista.
5. De Girancourt, F.J., Kuyoro, M., Ofosu-Amaah, N.A., Seshie, E., Twum, F. (2020). *How the COVID19 crisis may affect electronic payments in Africa.* McKinsey & Company. Retrieved 8.10.2021 from https://www.mckinsey.com/~/media/mckinsey/industries/financial%20services/our%20insights/how%20the%20covid%2019%20crisis%20may%20affect%20electronic%20payments%20in%20africa/how-the-covid-19-crisis-may-affect-electronic%20payments-in-africa.pdf.
6. Deloitte AG. (n.d.). *Perspectives: COVID-19 boosts digitalisation of retail banking*. Retrieved 6.10.2021 from https://www2.deloitte.com/ch/en/pages/financial-services/articles/corona-krise-digitalisierungsschub-im-retailbanking.html
7. Dubey, V., Sonar, R., & Mohanty, A. (2020). FinTech, RegTech and contactless payments through the lens of COVID 19 times. *International Journal of Advanced Science and Technology*, *29*(6), (p. 3727-3734).
8. EUROSTAT. (2020). *Online shopping and payment security concerns*. Retrieved 12.10.2021 from https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/edn-20200128-1
9. Eurostat. (2021). *Key figures on Europe 2021 edition.* Retrieved 12.10.2021 from https://ec.europa.eu/eurostat/web/products-statistical-books/-/ks-ei-21-001
10. FIS Worldpay. (2021). *The 2021 Global Payments Report.* Retrieved 12.10.2021 from *https://worldpay.globalpaymentsreport.com/en/*
11. Heikkinen, P, Välimäki, T. (2021) Future of payments at hand. *Bank of Finland Bulletin*; 2021 (2). Retrieved 12.10.2021 from https://helda.helsinki.fi/bof/bitstream/handle/123456789/17999/bulletin_2_2021_payments.pdf?sequence=1&isAllowed=y
12. HNB. (2020). *FinTech u bankarstvu: tehnološki trend ili promjene u arhitekturi novca?*. Retrieved 14.10.2021 from https://www.hnb.hr/-/fintech-u-bankarstvu-tehnoloski-trend-ili-promjene-u-arhitekturi-novca.
13. Jayan, M. V. L., Xavier, M. L. (2020). An Empirical Study On The Online Shopping Acceptance: Pre And Post Covid-19 Outbreak. *Perspectives on Business Management & Economics*, 3, p. 25-30. Retrieved 14.10.2021 from https://pbme.in/papers/72.pdf

14. Kaur, M., Shefali, Barthwal, H. (2021). A Study on the Factors Influencing the Adoption of E-Payment Systems Amidst the Covid -19 Pandemic. *Applied Management Perspectives* 1(1), (p. 14-25).
15. Khan, B. U. I., Olanrewaju, R. F., Baba, A. M., Langoo, A. A., Assad, S. (2017). A compendious study of online payment systems: Past developments, present impact, and future considerations. *International journal of advanced computer science and applications*, *8*(5), 256-271.
16. KPMG, Australia. (2019). The future of digital banking. Retrieved 12.10.2021 from https://assets.kpmg/content/dam/kpmg/au/pdf/2019/future-of-digital-banking-in-2030-cba.pdf.
17. KPMG. (August, 2020). *Impacting digital payments in India*. Retrieved 6.10.2021 from https://assets.kpmg/content/dam/https://assets.kpmg/content/dam/kpmg/au/pdf/2019/future-of-digital-banking-in-2030-cba.pdf.
18. Liébana-Cabanillas, F., García-Maroto, I., Muñoz-Leiva, F., Ramos de Luna, I. (2020). *Mobile Payment Adoption in the Age of Digital Transformation: The Case of Apple Pay*. Sustainability 12(13), (p. 1-15). Basel, Switzerland
19. Liébana-Cabanillas, F., Muñoz-Leiva, F., Sánchez-Fernández, J. (2018a). A global approach to the analysis of user behaviour in mobile payment systems in the new electronic environment. *Service Business* 12(1), (p. 25–64).
20. LocalCircles. (2020). *Impact of Coronavirus on how India pays*. Retrieved 12.10.2021 from https://www.localcircles.com/a/press/page/coronavirus-lockdown-digital-payments-survey#.YXKMPBxJ1PZ.
21. Lukovic, V. (2021). *Online Banking and Information Technology During the Covid-19 Pandemic: Between the Need and the Ability* (No. 5778). EasyChair. Retrieved 14.10.2021 from https://easychair.org/publications/preprint/KVxm.
22. Martyniuk, D., Stasczak, S., Spionek, A. Bartosiak, A. (2016). Fintech in CEE: Charting the Course for Innovation in Finacial Services Technology. Deloitte, Department for international trade. Retrieved 5.10.2021 from https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/central-europe/ce-fintech-in-cee-region-2016.pdf
23. McKinsey and Company (2020). *Global Banking Practice: The 2020 McKinsey Global Payments Report*. Retrieved 8.10.2021 from https://www.mckinsey.com/~/media/mckinsey/industries/financial%20services/our%20insights/accelerating%20winds%20of%20change%20in%20global%20payments/2020-mckinsey-global-payments-report-vf.pdf.
24. Mišić Tomislav (2021). Utjecaj pandemije COVID-19 na navike plaćanja u RH. Zagreb: Hrvatska narodna banka. Retrieved 6.10.2021 from https://www.hnb.hr/-/utjecaj-pandemije-covid-19-na-navike-placanja-u-rh.
25. Musyaffi, A. M., Sari, D. A. P., Respati, D. K. (2021). Understanding of Digital Payment Usage During COVID-19 Pandemic: A Study of UTAUT Extension Model in Indonesia. *The Journal of Asian Finance, Economics and Business*, *8*(6), (p. 475-482).
26. Ojo D Delaney, M. (2021). Sustainable Finance, Current and Future Implications for Banks and Monetary Policy: Assessing COVID Impacts. *CIISD Economic Review 2021*. Retrieved 8.10.2021 from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3852247.
27. Pinshi, C.P. (2021), Exploring the usefulness of Fintech in the dark era of COVID-19. *Journal of Advanced Studies in Finance (JASF)*, 12/1 (23), (p. 40-50). Romania, *Craiova*: ASERS Publishing.
28. Santosa, A. D., Taufik, N., Prabowo, F. H. E., Rahmawati, M. (2021). Continuance intention of baby boomer and X generation as new users of digital payment during COVID-19 pandemic using UTAUT2. *Journal of Financial Services Marketing*. Advance online publication, (p. 1-15).

29. Siby, K M. (2021). A Study on Consumer Perception of Digital Payment Methods in times of Covid Pandemic. *International Journal of Scientific Research in Engineering and Management* 5(3), (p. 1-12**).**
30. Sintonen, M., Takala, K., Hellqvist, M., Liikanen, J. (2021). *COVID-19 pandemic causing permanent change in payment habits*. Retrieved 14.10.2021 from https://www.bofbulletin.fi/en/2021/2/covid-19-pandemic-causing-permanent-change-in-payment-habits/.
31. Slotta D. (2021). *Leading security concerns when using mobile payments in China in 2020.* Statista.
32. Statista Resaerch Department. (2020a). *Global growth in finance app usage during COVID-19 2020.* Statista.
33. Statista Research Department. (2021a). *Share of e-commerce payment methods in Asia Pacific in 2020*. Statista.
34. Statista Research Department. (2021b). *Distribution of preferred payment methods in Southeast Asia in 2020, by country*. Statista.
35. *Statista Research Department. (2021c). Preferred mode of payment since the coronavirus (COVID-19) pandemic across India in 2020, by gender.* Statista.
36. Statista Research Department. (2021d). *Impact of the coronavirus (COVID-19) on digital payments in India as of April 2020, by type of purchase*.
37. Statista. (2020). *In-depth Report: FinTech 2020 - Statista Digital Market Outlook*.
38. Statista. (2021a). *Statista Global Consumer Survey: Sustainable Consumption in the UK 2021*.
39. Statista. (2021b). *Consumer fintech adoption rates globally from 2015 to 2019, by category.*
40. Statista. (2021c). *FinTech Report 2021 – Digital Payments: Statista Digital Market Outlook – Segment Report*.
41. Statista. (2021d). *Share of selected payment methods as percentage of total e-commerce transaction volume worldwide in 2020, by region*.
42. Statista. (2021e). *Global development of e-commerce shares of grocery stores before and after the coronavirus (COVID-19) pandemic***.**
43. Statista. (2021f). *Distribution of payment methods used for e-commerce in Sweden in 2020, compared to the Europe.*
44. Statista. (2021g). *Distribution of e-commerce payment methods in the United States in 2020, compared to the Europe.*
45. Statista. (2021h). *Statista Global Consumer Survey Digital shopping behaviour, How have you conducted payments online in the past 12 months?*.
46. Varrella S. (2021). *Population purchasing or paying bills online in Africa 2021, by country*. Statista, 2021.
47. Wisniewski, T. P., Polasik, M., Kotkowski, R., & Moro, A. (2021). *Switching from cash to* cashless payments during the COVID-19 pandemic and beyond. Poland, Warsaw: Narodowy Bank Polski. Retrieved 12.10.2021 from https://www.nbp.pl/publikacje/materialy_i_studia/337_en.pdf.

INDICATORS FOR MEASURING THE LEVEL OF SATISFACTION AND DISMISSAL OF CADETS OF THE MILITARY EDUCATION IN BULGARIA

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ABSTRACT
The purpose of this research is to reveal the true reasons that cause cadets to drop out of the "Combined Joint Task Forces" faculty. It is important to take into account the opinions of the students and to present from their point of view the achievements and shortcomings of the overall organization of life and learning process at the "Vasil Levski" National Military University. To monitor the changes in the opinions of the studied cadets the Academic council of "Vasil Levski" National Military University accepted "Methods for monitoring the opinions of the students about the learning process and administrative services" at "Vasil Levski" NMU. The document defines the goal, subject, object, methods and organization of the research and the way of taking into account the opinion of the students.
Keywords: *Training, Cadets, Indicators, Military education*

1. INTRODUCTION

The methods used to study the opinions of the "Vasil Levski" National Military University (NMU) students include a survey, specially developed for each study group. The criteria by which the opinions are taken into account are the attitude of the students towards the organization of the learning process, the way of teaching and the quality of life. The attitude is measured by the level of student's satisfaction with how their needs and interests in the social environment of the "Vasil Levski" National Military University are satisfied. Indicators for measuring the level of satisfaction with the organization of the learning process are as follows: internal regulations, decrees and instructions, the overall time distribution at the "Vasil Levski" National Military University, curricula and programmes of study, time-limits for preparation for lectures (self-preparation), planning of the educational process, transfer and accumulation of credits. Indicators for measuring the level of satisfaction with the way of teaching include methods and forms of teaching, relevance of the taught material to the novelties in a specific field, system for control and assessment of knowledge, practical orientation of the knowledge taught, supply of the needed textbooks and leadership qualities training. Indicators for measuring the level of satisfaction with the quality of life include living conditions, internal order and organization, relations with lecturers, relations with commanders and other superiors and relations with colleagues. For the period 2008-2017, a total of 1561 cadets have participated in the survey.

The results of the survey are presented by years, however for certain indicators and questions the first- and fifth-year students were separated from the rest due to the peculiarities of their answers (Terziev, Nichev, Bogdanov, 2017a; Terziev, Nichev, 2017b; Terziev, Nichev, 2017c).

2. ORGANIZATION OF THE LEARNING PROCESS

The organization of a learning process generally includes curricula and programmes, planning of a learning process, administrative services and time distribution. If these components are implemented at a high level, then the cadets will have higher motivation and will succeed in their education. Following the activities set in the schedule of classes and distributing time help optimize the learning process, distribute mental and emotional strength more efficiently, solve priority tasks and create opportunities for effective rest. The dynamics of dissatisfaction of the students of the "Combined Joint Task Forces" faculty under "Organization of a learning process" criterion for the period 2008-2017 is shown in Figure 1 (Terziev, et al. 2020).

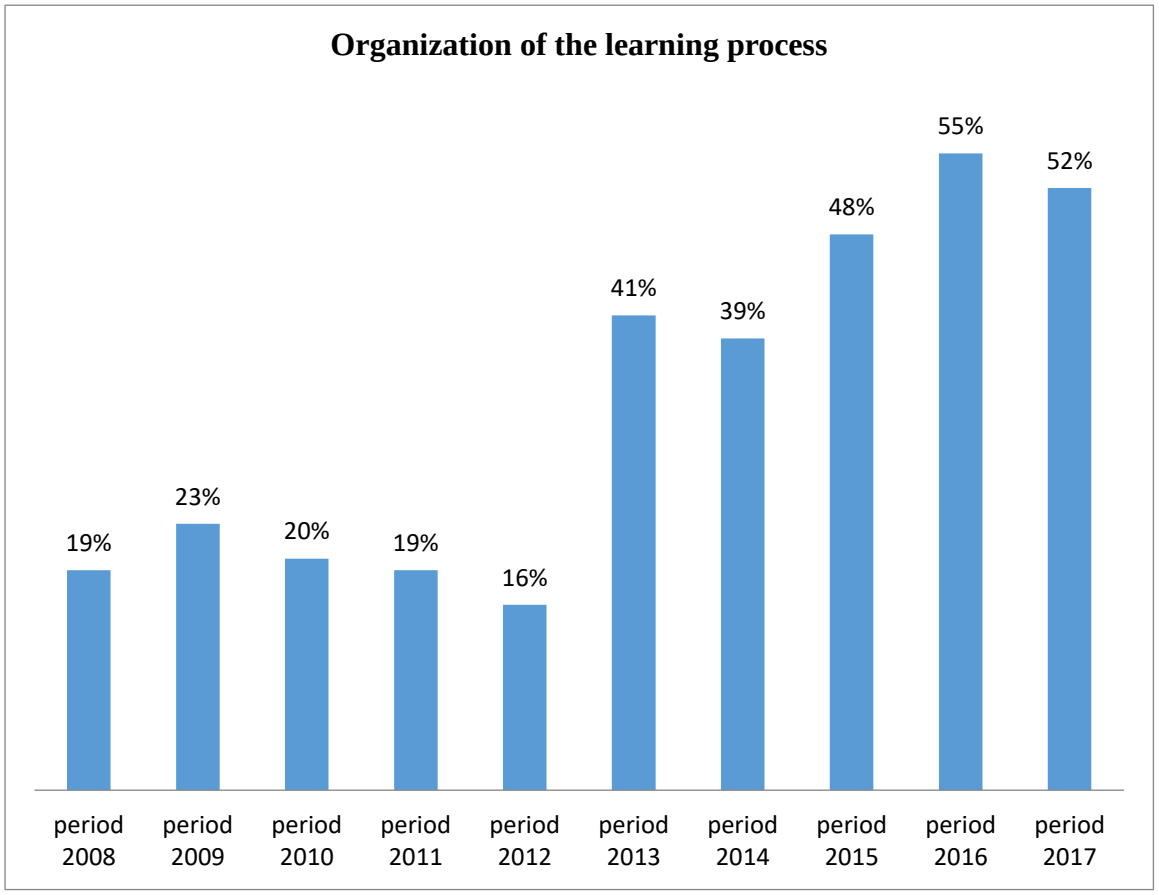

Figure 1: Dynamics of dissatisfaction of the students of the "Combined Joint Task Forces" faculty under "Organization of a learning process" criterion for the period 2008-2017

The main tendency in the dynamics of the indicator "Organization of a learning process" of the students of the "Combined Joint Task Forces" faculty is the relatively uniform dissatisfaction during the period 2008-2012 – from 16% to 23% and the sharp escalation of the level of dissatisfaction during the period 2012-2017 - from 16% to 55%. The obtained results indicate that in 2016 and in 2017 the level of dissatisfaction of cadets was higher than their satisfaction under "Organization of a learning process" criterion, therefore we will analyse this period in greater detail. Figure 2 shows the percentage of dissatisfaction of cadets under "Organization of a learning process" criterion and the relevant indicators.

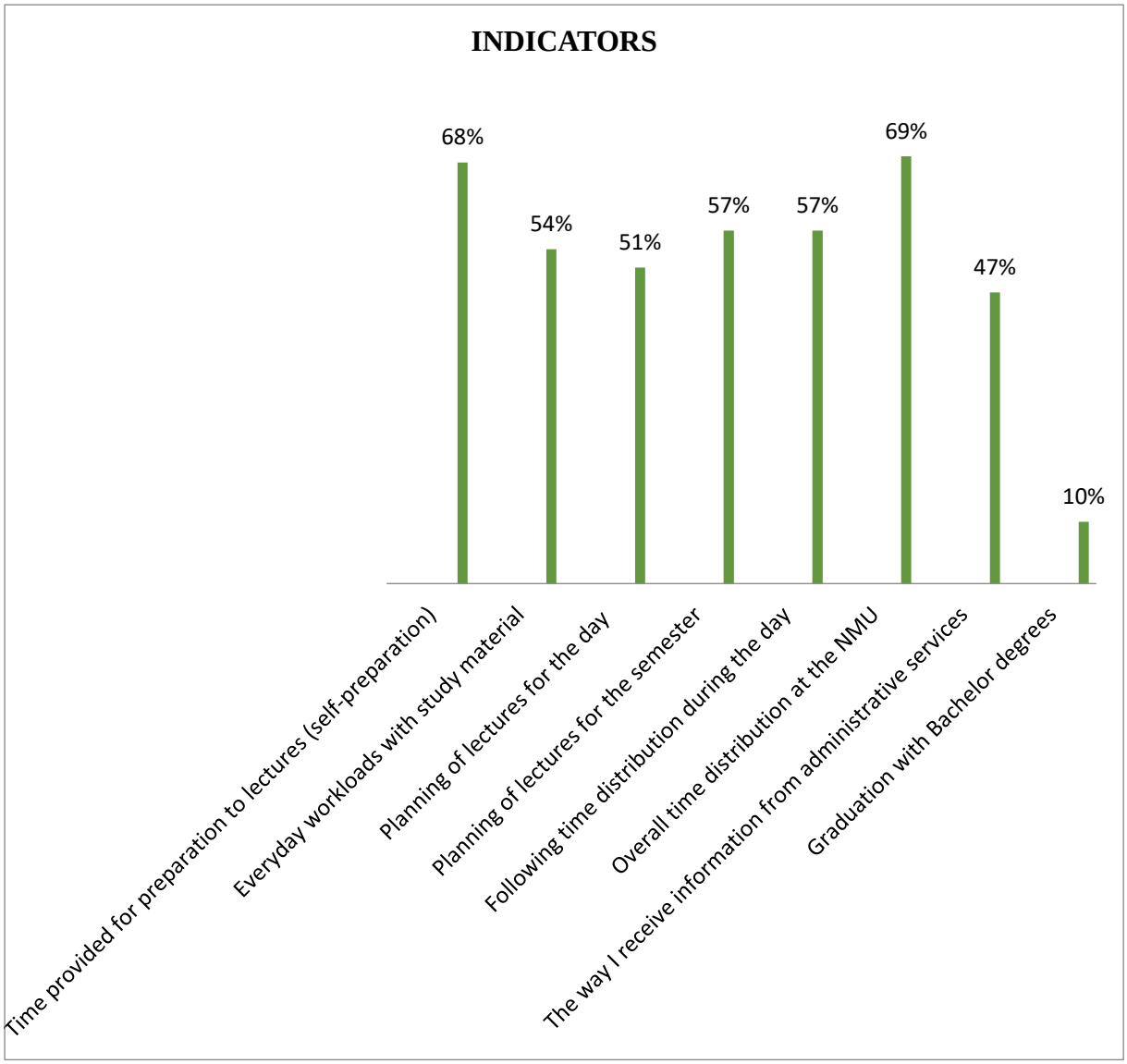

Figure 2: Percentage of dissatisfaction of cadets by certain indicators under "Organization of a learning process" criterion for the period 2016-2017

During the analysed period a relatively high degree of dissatisfaction of the students of the "Combined Joint Task Forces" faculty under "Organization of a learning process" criterion is with the overall time distribution in "Vasil Levski" National Military University and the time provided for preparation to lectures (self-preparation). The highest level of satisfaction (90%) comes from acquiring two Bachelor degrees. The level of satisfaction of the students of the "Combined Joint Task Forces" faculty under "Organization of a learning process" criterion and the indicators "overall time distribution at the "Vasil Levski" National Military University" and "time provided for preparation to lectures (self-preparation)" for the period 2008-2017 is shown in Table 1. and the dynamics of the development - in Figure 3.

Table following on the next page

Year	Number of students – part of the survey	Level of satisfaction	Criterion	Indicators	
			Organization of a learning process [number of students]	Time distribution [number of students]	Ensured time for self-preparation [number of students]
2008	26	dissatisfied satisfied	5 21	18 8	19 7
2009	93	dissatisfied satisfied	21 72	56 37	52 41
2010	70	dissatisfied satisfied	14 56	48 22	43 27
2011	176	dissatisfied satisfied	34 142	62 17	122 30
2012	154	dissatisfied satisfied	21 133	74 80	83 47
2013	158	dissatisfied satisfied	49 108	82 75	103 54
2014	144	dissatisfied satisfied	46 98	95 49	104 40
2015	196	dissatisfied satisfied	111 85	122 74	148 48
2016	234	dissatisfied satisfied	146 88	190 44	194 40
2017	284	dissatisfied satisfied	56 102	221 45	223 43

Table 1: Level of satisfaction under "Organization of a learning process" criterion and the indicators "overall time distribution at the "Vasil Levski" NMU" and "time provided for preparation to lectures (self-preparation)" for the period 2008-2017

Figure following on the next page

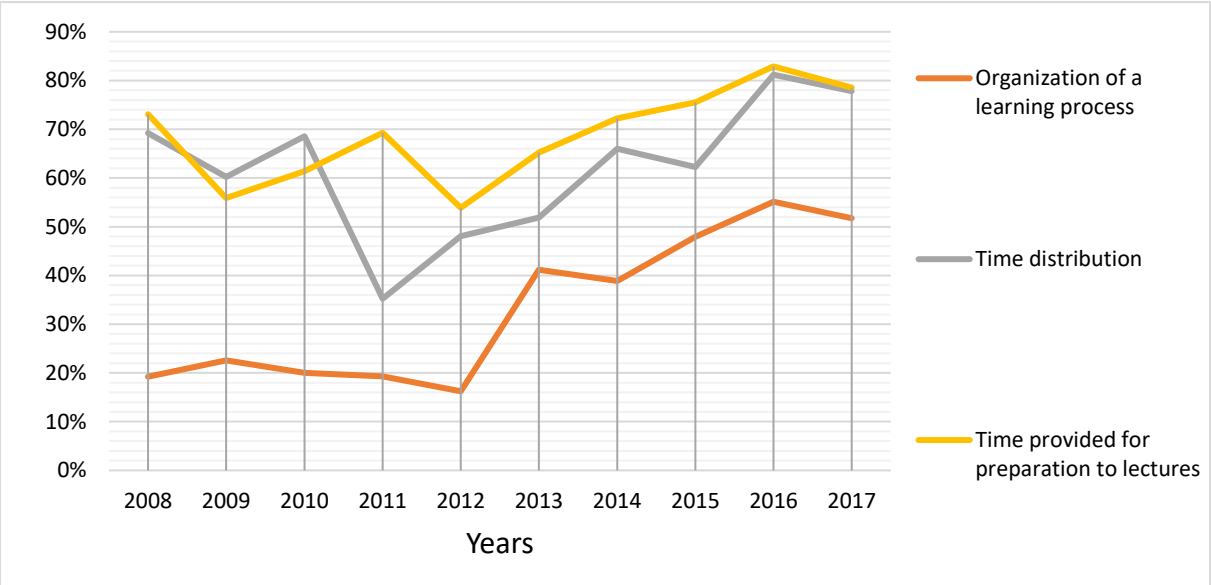

Figure 3: Dynamics of the degree of satisfaction of the students of the "Combined Joint Task Forces" faculty under "Organization of a learning process" criterion and the indicators "overall time distribution at the "Vasil Levski" National Military University" and "time provided for preparation to lectures (self-preparation)" for the period 2008-2017

There is a consistent pattern in the dynamics of the indicators "overall time distribution at the "Vasil Levski" National Military University" and "time provided for preparation to lectures (self-preparation)" for the period 2008- 2017 and the sharp escalation of the degree of dissatisfaction in 2016 and 2017, 81 and 84% and 83 and 84% respectively. A considerable increase in the level of satisfaction under the indicator "overall time distribution" can be observed in 2011 and 2012, when the level of satisfaction with time distribution is higher than that of dissatisfaction. The respondents are most dissatisfied with the overall time distribution most probably because they associate it with performing non-specific assignments that are not described in the schedule. Analysis of the provided time for preparation to classes shows that for the analysed period on average 69% of the respondents are dissatisfied with the lack of time to prepare to classes. Noteworthy, the expressed dissatisfaction with the overall time distribution is to a great extent related to reduction or not observing the time for preparation to classes. These factors have a negative influence on motivation and in some "more severe" cases can even lead to indifference or demotivation. The results demonstrate that the main reason for increase in dissatisfaction under "Organization of a learning process" criterion lies in implementation of new curricula in the learning process in 2016. The curricula x-xx-16 is characterised by increasing military training by 600 academic hours, so accordingly the learning time is increased by 80 academic days according to the old curricula and by 90 academic days according to the new curricula. This leads to maximum load of at least 6 academic hours per academic day and due to subjective and objective reasons in some cases an academic day includes even 10 academic hours.

3. WAY OF TEACHING

Teaching is an organised and thoroughly planned process of active cooperation in which a leading role of a teacher stimulates and directs learning and behaviour of students in terms of achieving set goals. This is a two-way process – of teaching and perceiving knowledge, of creating skills and turning them into habits. The survey of the level of satisfaction of the students under the indicator "Way of teaching" included the following matters: questions related to studying in military and civil programmes of study, the used forms of teaching

(lectures, exercises, seminars, practical classes, etc.), the used methods of teaching (verbal, written, visual, practical, etc.), easy-to-understand and easy-to-learn teaching, relevance of the taught material to the novelties in a specific field, practical orientation of knowledge taught, tests made during lectures, objectivity in knowledge assessment, the way students are motivated, the effectiveness of the office hours, the way of conducting semester exams, the usefulness of the acquired knowledge, provision of the needed textbooks, the attitude of the lecturers towards the learning process, the intelligence and professionalism of the lecturers and the relationships cadet – lecturer. Dynamics of the degree of dissatisfaction of the students of the "Combined Joint Task Forces" faculty under "Way of teaching" criterion for the period 2008-2017 are shown in Figure 4.

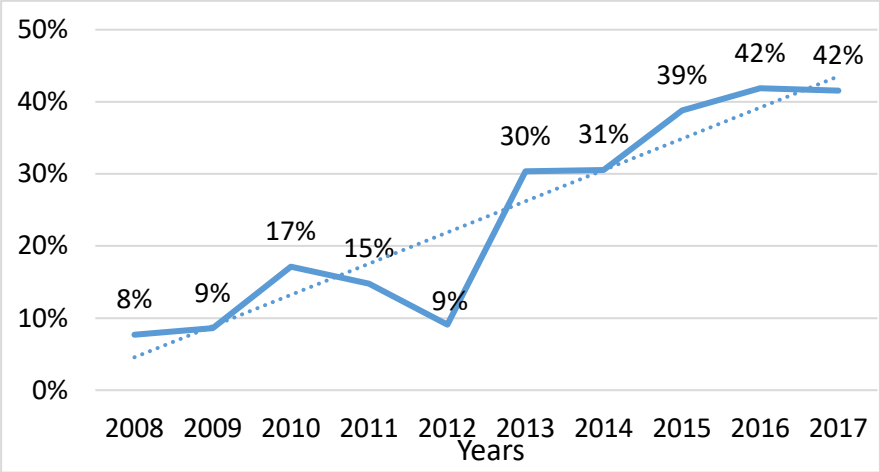

Figure 4: Dynamics of the degree of dissatisfaction of the students of the "Combined Joint Task Forces" faculty under "Way of teaching" criterion for the period 2008-2017

The main tendency in the dynamics of the indicator "Way of teaching" of the students of the "Combined Joint Task Forces" faculty is low degree of dissatisfaction for the period 2008-2012 – from 8% to 17% and sharp escalation of the level of dissatisfaction during the period 2012-2017 – from 9% to 42%. During the analysed period the respondents expressed their highest level of satisfaction under several indicators of the criterion "Way of teaching", however one of the lowest degrees of satisfaction is under the indicator "way of motivating students". Figure 5 illustrates the dynamics of the degree of dissatisfaction of the respondents studying in the "Combined Joint Task Forces" faculty by the criterion "Way of teaching" and the indicator "way of motivating students" for the period 2008-2017.

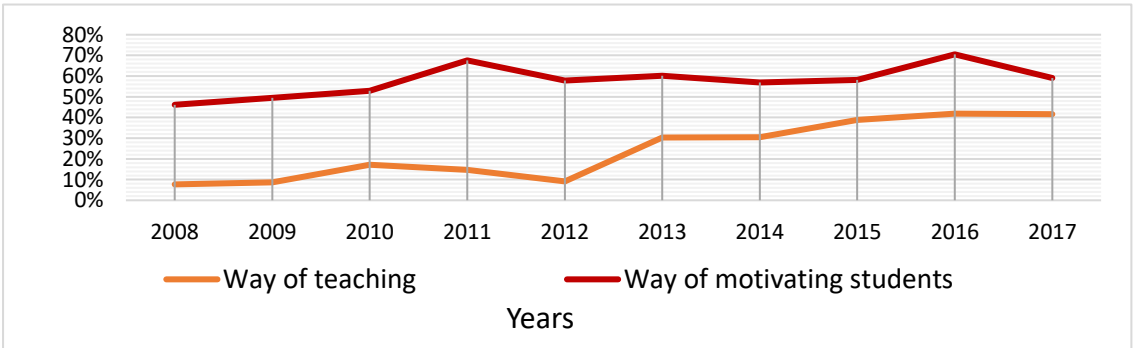

Figure 5: Dynamics of the degree of dissatisfaction of the respondents studying in the "Combined Joint Task Forces" faculty by the criterion "Way of teaching" and the indicator "way of motivating students" for the period 2008-2017

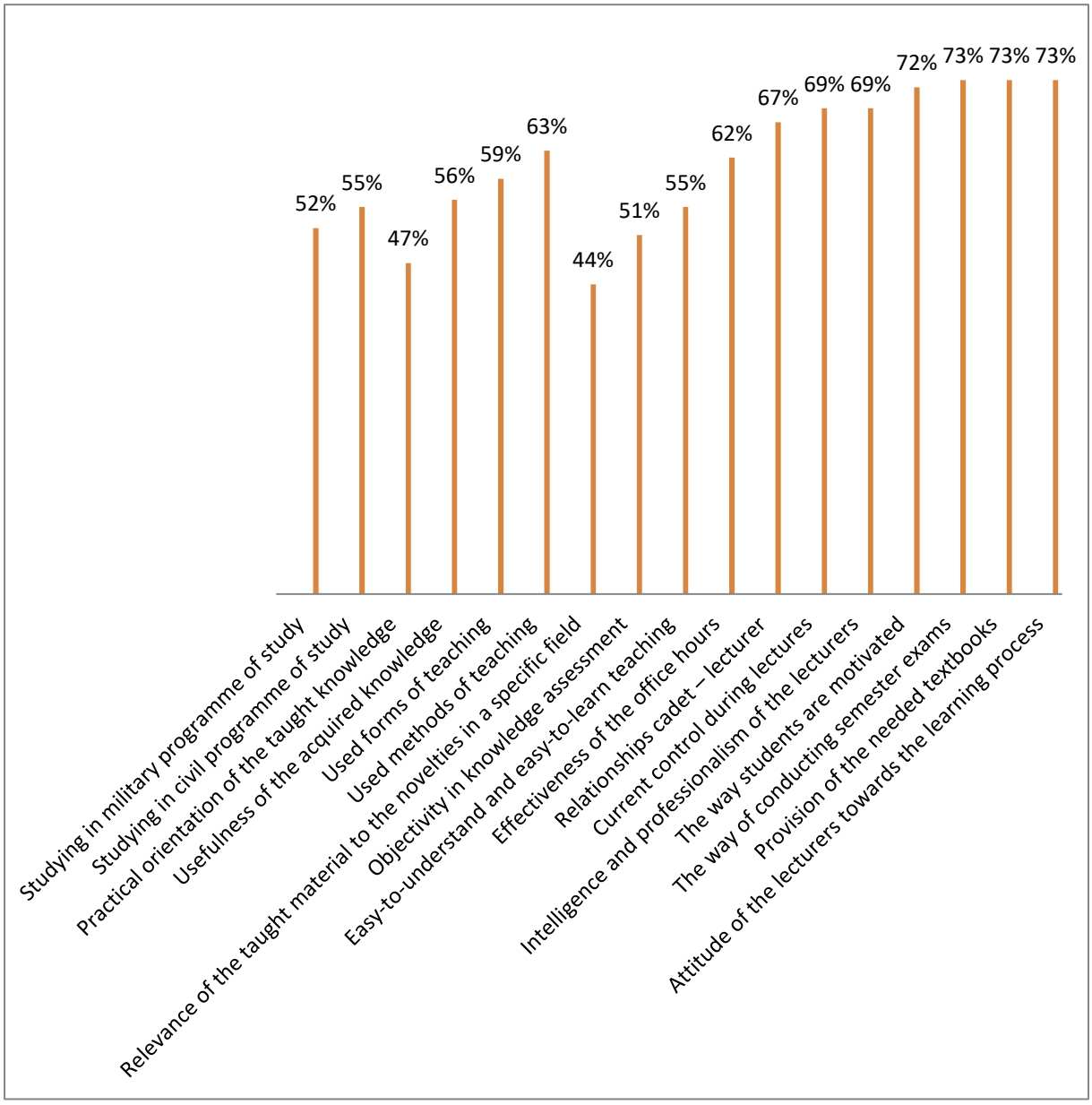

Figure 6: Percentage of the dissatisfaction of the cadets by relevant indicators of the criterion "Way of teaching" for the period 2016-2017

The obtained results show that in 2015, 2016 and 2017 the dissatisfaction of the students remained at the highest levels in the range from 39% to 42%, which is sufficient reason to analyse this period in detail. Figure 6 illustrates the percentage of the dissatisfaction of the cadets by the criterion "Way of teaching" and the relevant indicators. The results let us conclude that a significant part of the questions in the survey are beyond the competences of the questioned cadets (studying in military and civil programmes of study, the used forms of teaching – lectures, exercises, seminars, practical classes, etc., the used methods of teaching – verbal, written, visual, practical, etc., the usefulness of the acquired knowledge). It should be noted that the above-mentioned questions are regulated in the Regulations for acquiring higher education in programmes of study of the regulated profession "Tactical officer" and Requirements of the users of personnel reflected in the qualification characteristics to the curricula. Quality of life is a degree of prosperity and personal satisfaction experienced by a person according to various criteria of physical, psychological and social nature.

Satisfaction of personal needs of an individual, good health condition, physical comfort, good nutrition, physical activity, mental health and social activity are extremely important for every person. The survey for the analysis of the level of satisfaction of students under the indicator "Quality of life" includes matters related to living conditions, internal order and organization, relationships with lecturers, relationships with commanders and superiors and relationships with colleagues. The dynamics of dissatisfaction of the respondents studying in "Combined Joint Task Forces" faculty under the criterion "Quality of life" for the period 2008-2017 is illustrated in Figure 7.

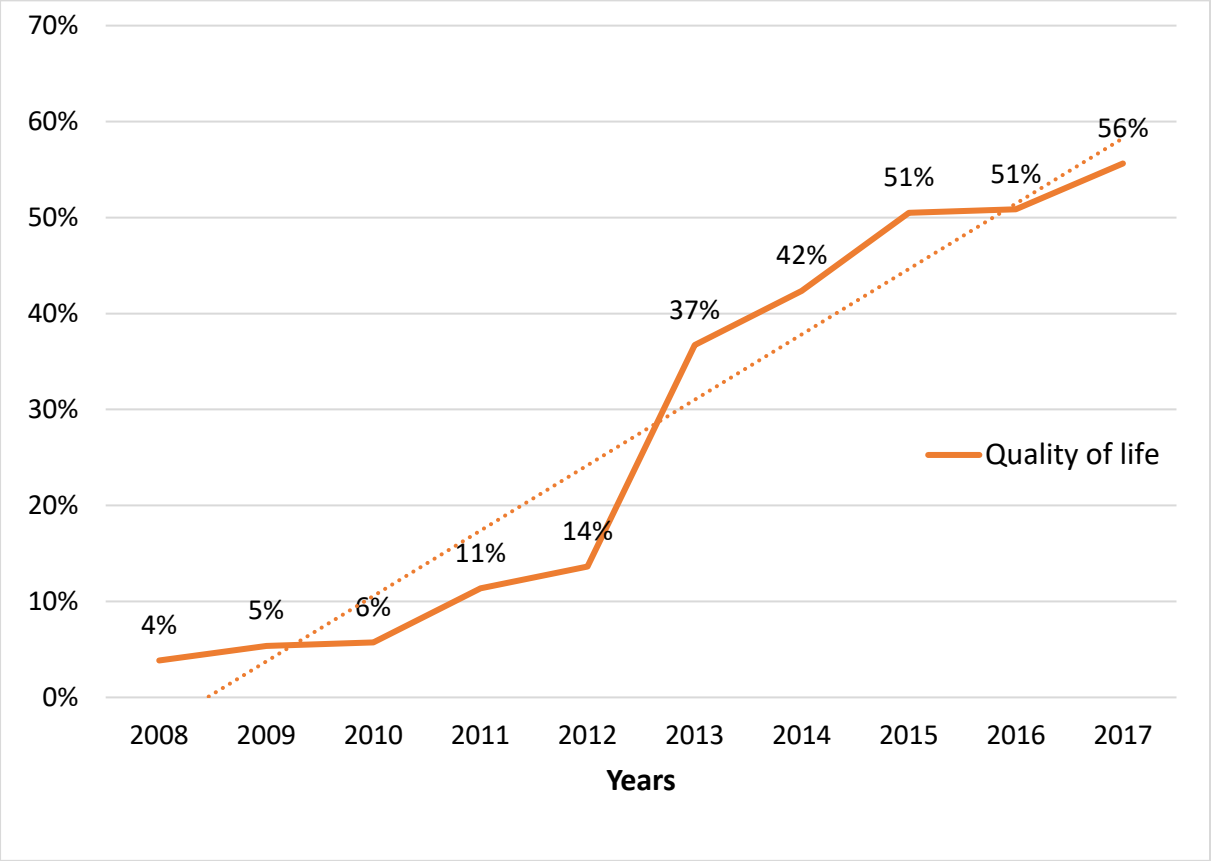

Figure 7: Dynamics of dissatisfaction of the respondents studying in "Combined Joint Task Forces" faculty under the criterion "Quality of life" for the period 2008-2017

The main tendency in the dynamics of the indicator "Quality of life" of the students of the "Combined Joint Task Forces" faculty is low degree of dissatisfaction for the sub-period 2008-2012 – from 4% to 14% and sharp escalation of the degree of dissatisfaction during the sub-period 2012-2017 – from 14% to 56%. During the analysed period the respondents expressed their highest level of satisfaction under several indicators of the criterion "Quality of life", however one of the lowest degrees of satisfaction is under the indicator condition of food, such as the quantity and quality and the bad condition of classrooms and halls and especially the lack of heating during winter. Figure 8 illustrates the comparison between the three criteria. It is obvious that the lowest degree of dissatisfaction is under the criterion "Quality of teaching", which is the main priority of the "Combined Joint Task Forces" faculty and which it can influence. The other two criteria are from the point of view of organization of the educational process in the "Vasil Levski" National Military University and are beyond the competencies of the faculty.

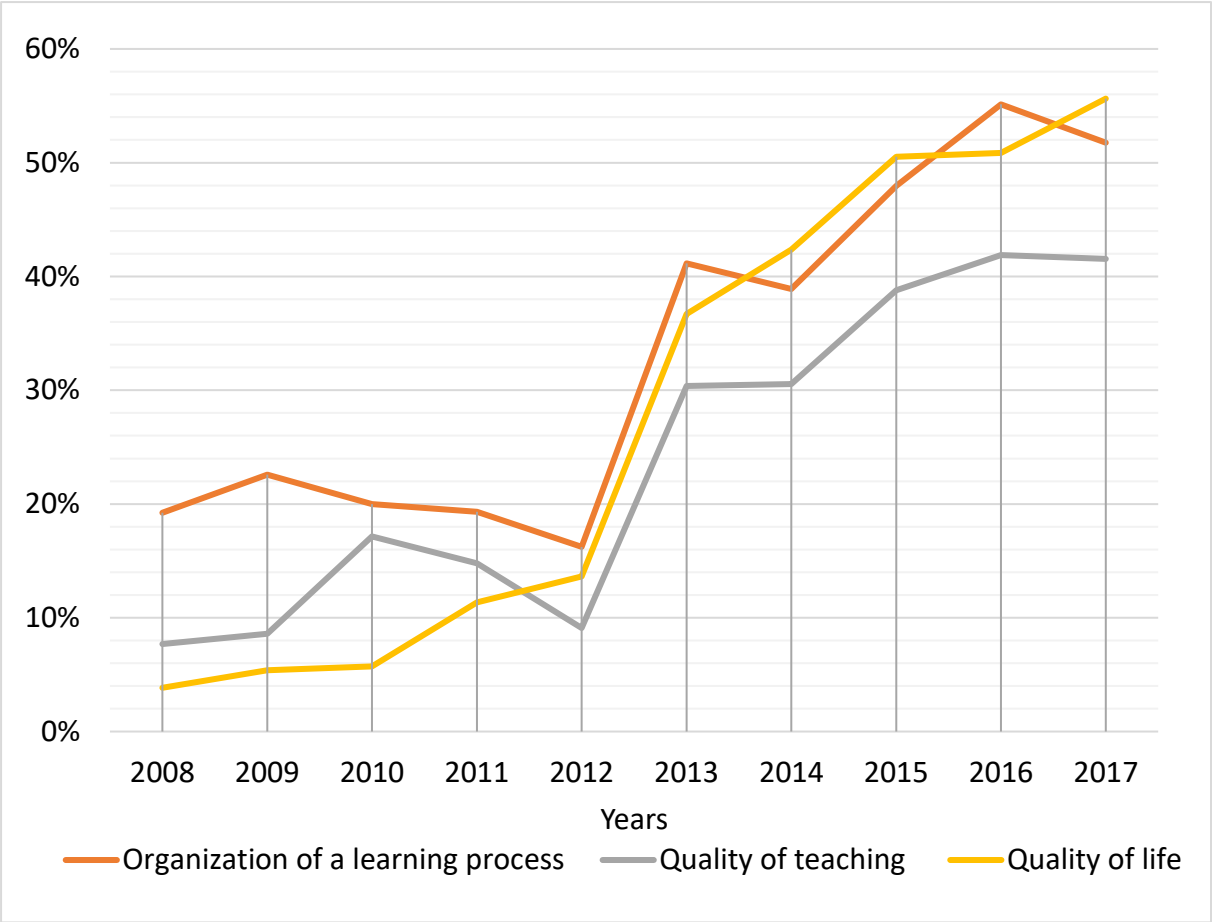

Figure 8: Dynamics of dissatisfaction under the criterion "Organization of a learning process", "Quality of teaching" and "Quality of life" for the period 2008-2017

4. CONCLUSION

To summarize, we can make the following conclusions (Ivanov, Koynakov, Simeonov, 2021a; Ivanov, Koynakov, Simeonov, 2021b; Georgiev, Simeonov, Ivanov, 2021c; Georgiev, Simeonov, Ivanov, 2021d):

- Psychologists of the "Military psychology" section process the data and prepare a summary report with the results from the survey for each category of students, which then is presented to the Chancellor of the University. Based on the analysis of the results, Department of education and accreditation of "Vasil Levski" National Military University prepares a plan for improving the quality of the educational process and lifestyle and submits it to the Academic Council for approval.
- The methods of assessing the quality of education and maintaining a programme of study are developed as elements of the overall assessment (self-assessment) of the system of quality management at the "Vasil Levski" National Military University and include: Assessment of the programme of study by main criteria, their scope and content, as well as the way of assessment; Assessment of the preparation of cadets and students according to the opinions of users, formed on the basis of surveys with commanders, managers of companies and organizations and managers of different levels during internships of students under indicators forming the criteria for cadets and students; Assessment of teaching and learning the material – performed on the basis of the survey with the students under indicators that were grouped by presented criteria, with separate study groups or flows, at least once a semester, after completing a topic, module or the whole discipline (Terziev, Nichev, 2017d).

LITERATURE:

1. Terziev, V., Nichev, N., Bogdanov, P. (2017a). Comparative analysis of the formation of military professional skills in the cadets to be trained in logistics specializations. // Proceedings of ADVED 2017- 3rd International Conference on Advances in Education and Social Sciences 9-11 October 2017- Istanbul, Turkey, 2017, pp.671-677, ISBN: 978-605-82433-0-9.
2. Terziev, V., Nichev, N. (2017b). Research on the management skills and abilities acquired in the military education system. // CBU International Conference Proceedings 2017, March 22-24, Prague, Czech Republic, Innovations in Science and Education, 2017, pp.846-850, ISSN 1805-997X (Print), ISBN 978-80-88042-07-5 (Print edition).
3. Terziev, V., Nichev, N. (2017c). Developing the readiness for the organizational activity of the cadets. // CBU International Conference Proceedings 2017, March 22-24, Prague, Czech Republic, Innovations in Science and Education, 2017, pp.915-919, ISSN 1805-997X (Print), ISBN 978-80-88042-07-5 (Print edition).
4. Terziev, V., Georgiev, M., Nichev, N., Solovev, D., Bogdanov, P. (2020). Implementation of the strategy card in the system of military education. // Proceedings of SOCIOINT 2020-7th International Conference on Education and Education of Social Sciences, 15-17 June 2020, International Organization Center of Academic Research, Istanbul, Turkey, 2020, pp. 137-146, ISBN: 978-605-82433-9-2.
5. Ivanov, I., Koynakov, K., Simeonov, S. (2021a). Research macronutrients intake from cadets in tactical classes. // 21st RSEP International Economics, Finance & Business Conference – Virtual/Online 19-20 May 2021, HCC. St. Moritz Hotel, Barcelona, Spain, RSEP, Ankara/Turkey, 2021, pp. 26-30, ISBN: 978-605-70583-0-0/May 2021.
6. Ivanov, I., Koynakov, K., Simeonov, S. (2021b). Research the energy status of military personel in tactical exercises in a mountain forest area. // 21st RSEP International Economics, Finance & Business Conference – Virtual/Online 19-20 May 2021, HCC. St. Moritz Hotel, Barcelona, Spain, RSEP, Ankara/Turkey, 2021, pp. 111-116, ISBN: 978-605-70583-0-0/May 2021.
7. Georgiev, M., Simeonov, S., Ivanov, I. (2021c). Factors for the successful implemantation of self-dependant training during the educative process. // 20th RSEP International Economics, Finance & Business Conference – Virtual/Online 17-18 February 2021, Holiday Inn Vienna City, Vienna, Austria, Review of Socio-Economic Perspectives RSEP, Ankara, Turkey, pp. 129-136, ISBN: 978-605-06961-8-9.
8. Georgiev, M., Simeonov, S., Ivanov, I. (2021d). Independent training of the cadets. // 20th RSEP International Economics, Finance & Business Conference – Virtual/Online 17-18 February 2021, Holiday Inn Vienna City, Vienna, Austria, Review of Socio-Economic Perspectives RSEP, Ankara, Turkey, pp. 137-145, ISBN: 978-605-06961-8-9.
9. Terziev, V., Nichev, N. (2017d). Analysis of the environment for military educational system functioning and its impact on the preparation of cadets for military professional activities in the republic of Bulgaria. // Proceedings of SOCIOINT 2017- 4th International Conference on Education, Social Sciences and Humanities 10-12 July 2017- Dubai, UAE, 2017, ISBN: 978-605-82433-1-6, pp.627-630.

A BRAVE NEW WORLD OF LOW INTEREST RATES TO MITIGATE THE EFFECTS OF THE FINANCIAL AND PANDEMIC CRISES

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ABSTRACT

"What a strange world we live in...", as said by Alice to the Queen of hearts. This quote from the 1865's Lewis Carroll masterpiece novel: "Alice's Adventures in Wonderland", brightly expresses the human amazement with the odd and changing nature of our world. This quote was true yesterday, is true today, and will continue to be true tomorrow. This also applies to the financial world, where the absolutely unexpected may, after all, occur, just as in Alice's Wonderland. We are referring to the nowadays bizarre world of the negative interest rates, a result of ultra-expansionary monetary policies that were put in place as a way to mitigate the very much negative effects from the 2008's financial crisis and from the current global pandemic crisis. This new odd and puzzling financial world was supposed to be a temporary one, with the purpose of facing a particular financial crisis, which was global, but affected severely the European Union (EU) countries. However, as the 2008's Great Recession spillover effects endured for longer than expected and as other crises soon followed, as Brexit and the Covid-19 pandemics, the temporary slowly turned on a kind of "new normal". Furthermore, if we believe that we are now living on an energy crisis environment, which links to the planet and climate changes crisis, well, it seems that living in a crisis environment is becoming the "new normal" as well. In this exploratory paper, the brave new world of extremely low interest rates and some of its effects are examined from the point of view of the EU and the European Central Bank (ECB)'s monetary policies. Several datasets from EU countries, covering the most recent decades of economic and financial activity support the analysis of this new dystopic financial world.

Keywords: *Economic Growth, Employment, European Union, Financial and Pandemic crises, Interest Rates, Monetary Policy*

1. INTRODUCTION

"What a strange world we live in...", as said by Alice to the Queen of hearts. This quote from the 1865's Lewis Carroll masterpiece novel: "Alice's Adventures in Wonderland", brightly expresses the human amazement with the odd and changing nature of our world. This quote was true yesterday, is true today, and will continue to be true tomorrow. This also applies to the financial world, where the absolutely unexpected may, after all, occur, just as in Alice's Wonderland. We are referring to the nowadays bizarre world of the negative interest rates, a result of ultra-expansionary monetary policies that were put in place as a way to mitigate the very much negative effects from the 2008's financial crisis and from the current global pandemic crisis. This new odd and puzzling financial world was supposed to be a temporary one, with the purpose of facing a particular financial crisis, which was global, but affected severely the European Union (EU) countries. However, as the 2008's Great Recession spillover effects endured for longer than expected and as other crises soon followed, as Brexit and the Covid-19 pandemics, the temporary slowly turned on a kind of "new normal".

Furthermore, if we believe that we are now living on an energy crisis environment, which links to the planet and climate changes crisis, well, it seems that living in a crisis environment is becoming the "new normal" as well. In this exploratory paper, the brave new world of extremely low interest rates, and some of its effects, are examined from the point of view of the EU and the European Central Bank (ECB)'s monetary policies. Several datasets from EU countries, covering the most recent decades of economic and financial activity support the analysis of this new dystopic financial world, while trying to examine a main question: to understand whether such extreme ease of monetary policy resulted in significant economic recovery and growth, or if, at least, contributed to mitigate one very severe effect from crises - the lack of employment.

2. CRISES AND THE EXTREME REDUCTION OF INTEREST RATES PHENOMENON

As presented in the introduction of this paper, it was the occurrence of severe crises, which led inclusively to a long deflationary environment, that justified the use of ultra-expansionary monetary policies, including quantitative easing measures, resulting in massive financial assets purchases and negative interest rates. However, such monetary easing has also resulted in some inconvenient situations, some of which may include the reversion from a deflationary to a strong inflationary environment, as seems to be the case currently. Another argumentation made to justify the use of such extreme ease of the monetary policies was the need for economic growth. One of the possible variables that could contribute to a reversion from a sluggish economic condition was the increase of debt, which has been incentivized by the ease of access to credit, often priced at negative interest rates. This resulted in a brave new world of extremely low interest rates, that can easily be very negative, i.e. a new dystopic financial world, resembling a surreal-futuristic environment, only possible because of blatant manipulation, as depicted by Huxley's 1930s novel "Brave New World" (Huxley, 2006). Despite the optimism of the policy-makers, the literature finds it hard to prove a clear positive and long-term relationship between economic growth and both public debt (vid. e.g. Pegkas et al., 2020; Reinhart and Rogoff, 2010; Ribeiro et al., 2012; Mhlab and Phiri, 2019; Snieska and Burksaitiene, 2018; Burhanudin et al., 2017; De Vita et al., 2018; Liagat, 2019; Esteve and Tamarit, 2018, Amann and Middledtich, 2017; Intartaglia et al., 2018; Chiu and Lee, 2017, Brida et al., 2017), and private debt (vid. e.g. Cafiso, 2019; Levine, 2005; Bernanke and Gertler, 1995; Ribeiro et al., 2012). Some policy-makers also argued that the ease of financial and monetary policies would contribute to increase the volume of foreign investment, therefore supporting more economic growth. Nevertheless, once again, the literature is not consensual while trying to prove such positive relationship (vid. e.g. Pegkas et al., 2020; Srinivasan et al., 2011; Srinivasan and Ibrahim, 2010; Azam et al., 2013; Azam et al., 2014; Azam and Ibrahim, 2014; Muhammad and Gavrila, 2015; Azam and Ather, 2015; Ribeiro et al., 2012). Regardless such academic doubts and other possible question marks, the fact is that one of the novelties that came from the 2008's financial crisis seems to be a paradigm shift in relation to interest rates. Interest rates are also important for the countries' bargaining power in relation to public debt, for example. Due to the ultra-expansionary monetary policies implemented by the European Central Bank, generally referred to as quantitative easing, interest rates were eventually crushed at near zero and even negative values in several European Union countries (ECB, 2021). In Figure 1, shown below, it is possible to observe the evolution of interest rates, measured according to the Maastricht Criteria for the Euro area countries, from the beginning of the year 2000. There was already a tendency of interest rates reduction before the 2008 financial crisis. However, this Great Recession environment raised the panic among creditors and investors, resulting in even more severe negative effects on the most fragile economies, some of which were highly leveraged.

Therefore, with the financial crisis, the weaker economies suffered interest rates increases, while the economies regarded as safer managed to keep them stable, and even benefited from rates reductions, as in the case of the so-called safe-haven economies, as Germany, or The Netherlands. By opposition, countries as Greece were severely punished with extremely high interest rates.

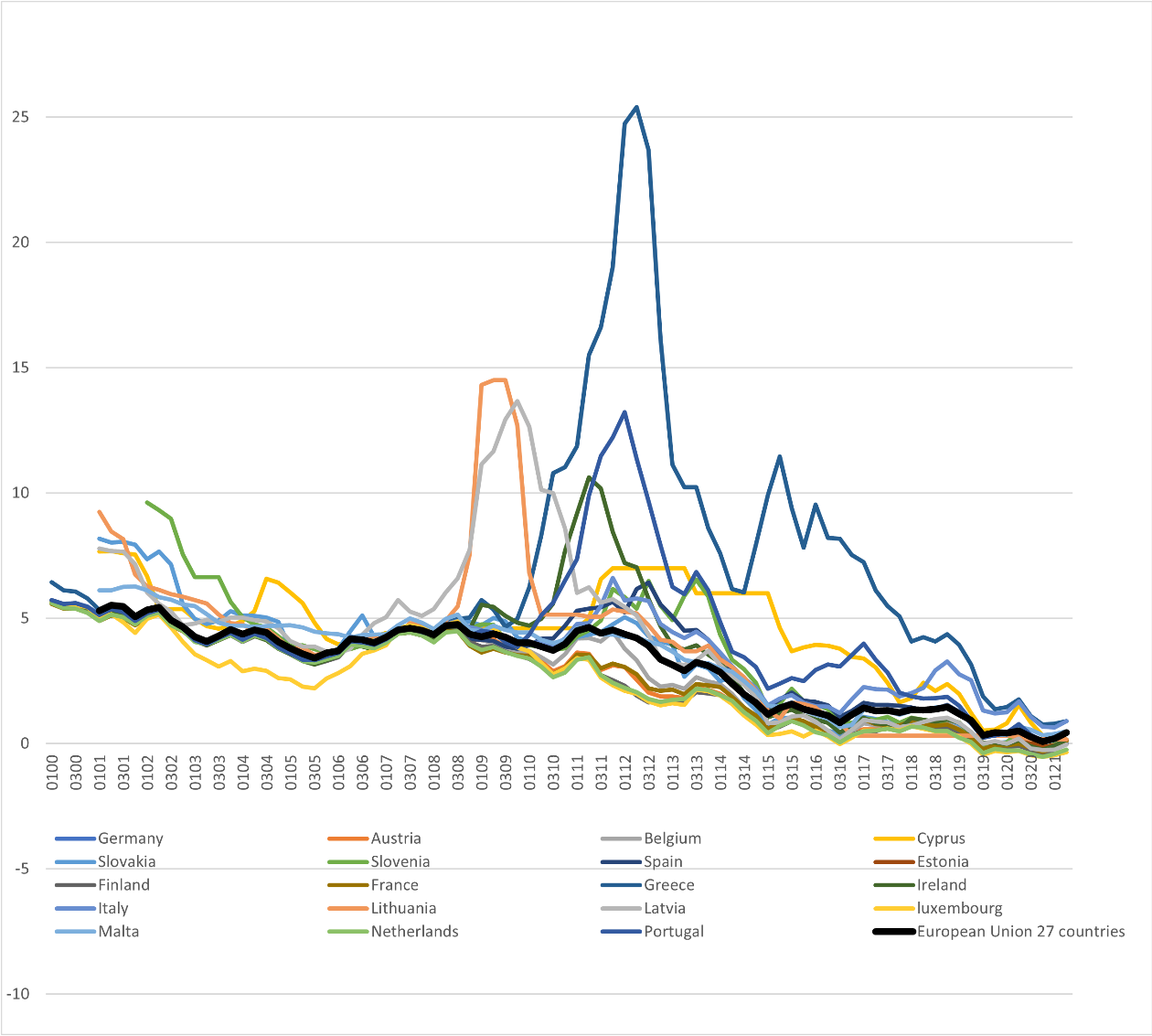

Figure 1: Interest rates according to the Maastricht Criteria for the Eurozone countries (Source: ECB, 2021)

A more detailed analysis allows to observe that from 2000 to 2008, i.e. before the financial crisis started, the Greek's interest rates were around 5%. However, with the effects of the financial crisis, the rates rose steeply for around four years, to reach a figure close to 30%. Only with the support of special measures from the EU and the ECB was possible to revert such chaotic and unsustainable situation which naturally led to an equally sharp drop by the end of 2012. Nevertheless, still very high values of interest rates persisted for Greece in the following years, between 5% and 15% until 2016. Finally, from here there was a continuous drop on rates to end close to 0% by 2021. Portugal also similarly started the new century with interest rates around 5%, but it would suffer similar effects from the crisis of 2008, recording record high rates, even if not as high as those of Greece, but still situated close to 10% to 15%.

After the end of 2011, rates returned to more moderate values, even if fluctuating and with some peaks for a few years, until 2017, when rates begin to finally fall in a steady way, until reaching values close to 0%. Lithuania and Latvia followed a path over the years relative to interest rate values very similar to Portugal and Greece, with the particularity that their highest peaks being reached in 2009, soon after the start of the financial crisis, contrasting with the highest peaks of Portugal and Greece, which would only take place later, between 2010 and 2012. Latvia and Lithuania were also lowering their interest rates to close to 0% by 2021. Interestingly, Germany, Luxembourg and the Netherlands were the countries that were keeping their interest rates the more constant and there were no major fluctuations and peaks, even during periods of crises. These countries not only approached their rates to 0%, but even reached and maintained negative rates during several periods of the past decade. Overall, the path of the interest rates for every Eurozone country resulted in the same fate: interest rates around zero, with many countries benefiting from negative rates. Looking globally to the interest rates of the 27 countries of the European Union, they were more or less constant reaching slightly the highest values between 2010 and 2013, the result of the peak of the financial crisis that led to extreme high rates of both Greece and Portugal, whose panic contributed to such generic increase. These countries even had to be helped with special assisting programmes financial. Italy, Spain and Ireland would also benefit from special support programs. It is also worthwhile to note that rates have gradually been lowering to close to 0%, even being negative in the last 2/3 years, despite that in the meantime a new economic crisis has begun, generated by the pandemic of the Covid-19, which has forced to take even further the ultra-expansionary monetary policy of the European Central Bank. Figure 2, exhibited below, allows to examine the evolution of the interest rates, considered according to the Maastricht criteria, for the non-Eurozone countries.

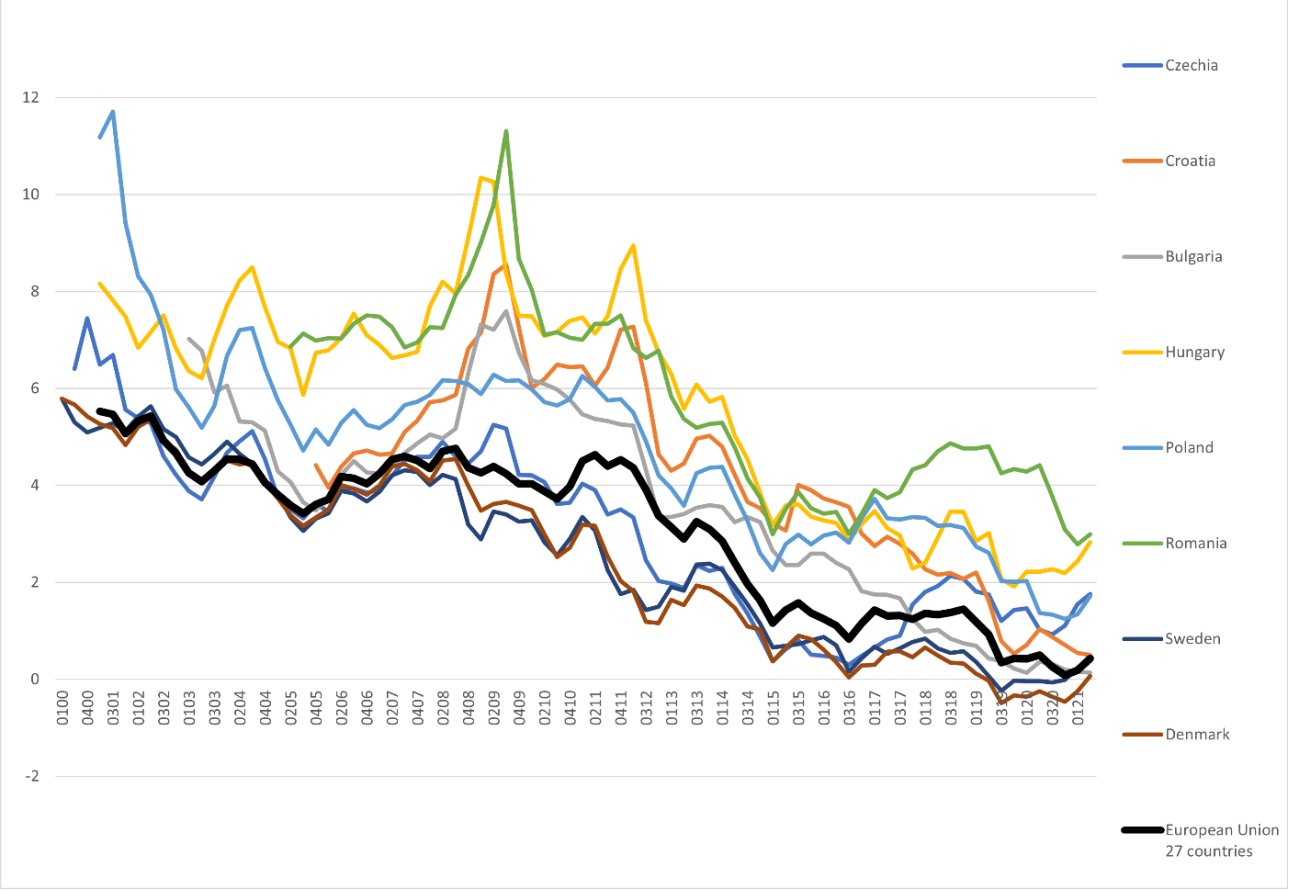

Figure 2: Interest rates according to the Maastricht Criteria for non-Eurozone countries (Source: ECB, 2021)

Figure 2 shows that countries outside the Eurozone have managed, from 2000 to 2021, to maintain interest rate rates between negative and 15% which is already a differentiating element of eurozone countries. We can see that Poland in 2001 had interest rates above 10%, and that in about 3 years it recorded an abrupt drop to less than half. In the following years, it returned to a peak, but after this remained constant until it tended to decline to values close to 0%, as most non-Eurozone countries. Romania, alongside Hungary, are the countries that still have relatively high interest rates nowadays. Nevertheless, despite consenting to somewhat high peaks, they have been progressively lowering their rates, even if they still remain between 2% and 5% which is curious compared to the trend of the other countries. Finally, it should be noted that Sweden, Denmark and Czechia, were the countries with the more stable evolution of interest rates. Their behaviour is somewhat similar to some of the most exemplar cases of EU countries: Luxembourg and the Netherlands, which are the Eurozone e countries with the lowest interest rates, with negative figures.

3. IMPACT OF THE MONETARY POLICY ON THE ECONOMIC GROWTH

Besides the literature on interest rates (vid. e.g. Christiano et al., 1999; Werner, 1996, 2005), there are other strands of research which examined the possible impacts of financial crises on the economic growth (Afonso et al., 2010; Jannsen et al., 2019; Ribeiro et al., 2012; Reinhart and Rogoff, 2010), and the inflation impacts as well (e.g. Reinhart and Rogoff, 2010; Afonso et al., 2010). Nevertheless, the main question remains: to understand whether such extreme ease of monetary policy resulted in significant economic recovery and growth. To assist such doubt, long-term time series of GDP growth for EU, Eurozone, USA and Japan, are shown below, in Figure 3.

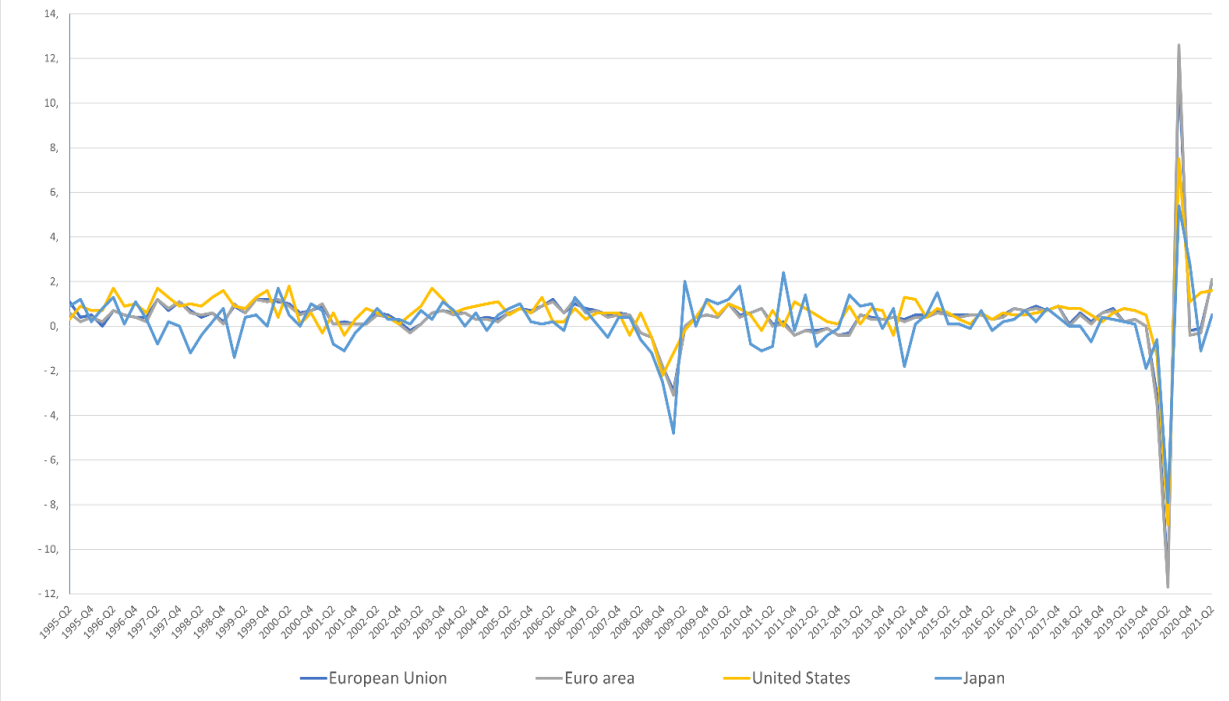

Figure 3: GDP growth rates over the previous quarter % chance, based on seasonally adjusted data. EU data for 28 countries until 2020, and for 27 countries after 2020 (Source: Eurostat, 2021)

Due to the global health crisis, countries worldwide felt the effects of confinement measures, such as lockdowns, and more protectionist policies, causing the economies to stagnate and even forcing to temporarily shut them down.

Consequently, another financial crisis has rose at a global level. This one stands out for appearing at a time of economic growth and some global stabilization, which for non-economic reasons was difficult to predict and somehow impossible to take preventive measures to cause less impact, due to the uncertain nature of the Covid-19 virus. Figure 3 illustrates very well the dramatic effect of the pandemic crisis on the economies. There is nothing similar in over 25 years of economic growth. Even the crash resulting from the 2008 financial crisis seems somewhat limited, when compared with the collapse recorded when the pandemic started. More broadly, one can clearly identify the major two crises of the last 3 decades: the 2008 crisis, which started in the United States, but quickly spread across the globe, therefore dragging the rest of the world, from Japan to Europe, which were severely affected. Nevertheless, countries resumed their growth cycles again, until when in 2020 a more serious crisis than the 2008 one arose, the Covid-19 crisis. The graph reflects the effects of confinement, high death rates and some lack of global preparation for this type of event, which led to uncontrolled focus of infections, a condition worsened by the absence of a vaccine, resulting in a very difficult year of 2020 and a hard early 202, for the European Union, Japan and the United States, with negative GDP values between minus 6 and minus 12 per cent. Fortunately, the creation of the Covid-19 vaccines, together with new preventive measures, and with high vaccine administration rates, allowed countries to gradually resume their normal economic activity. Somewhat surprisingly, the initial abrupt crashes would be reversed as well with a similarly strong, but opposite, effect, resulting in some remarkable economic recoveries soon after.

4. IMPACT OF THE MONETARY POLICY ON THE EMPLOYMENT

While the extreme low interest rates contributed to a rapid recovery of the economic growth, the question of understanding whether they contributed as well to recover the jobs lost with the pandemic remains. Indeed, severe crises are commonly associated to slow recovery paces of employment.

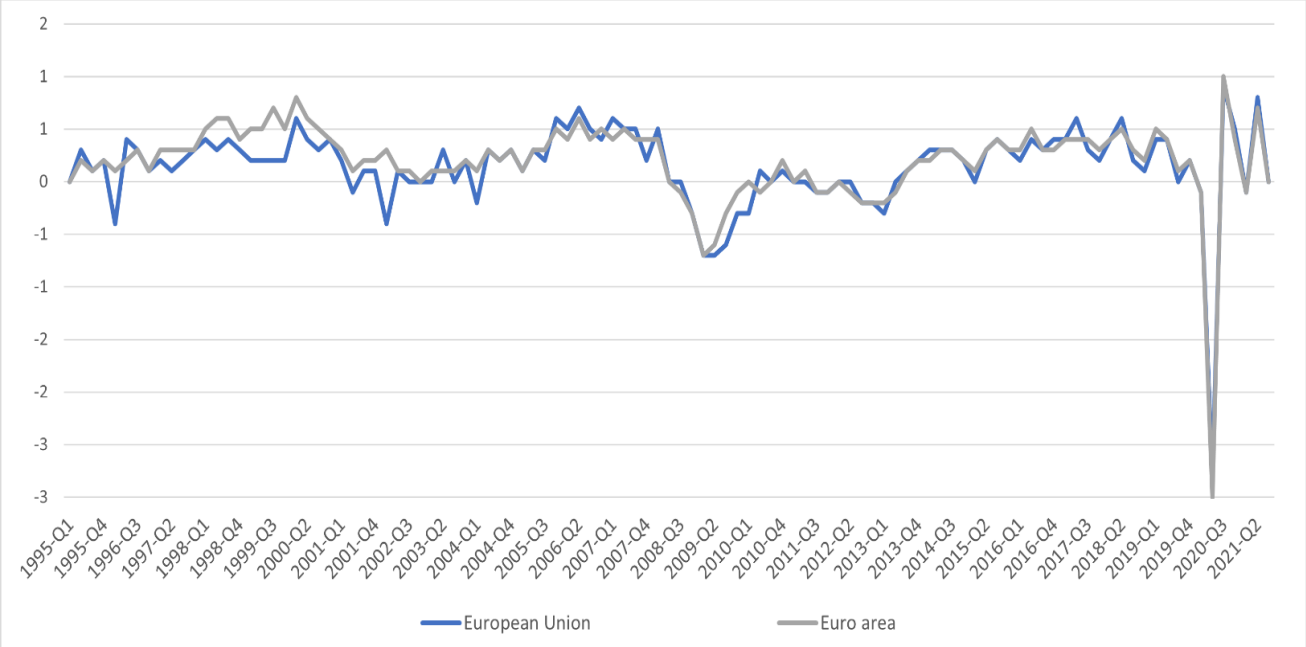

Figure 4: Growth of employment in persons over the same quarter of the previous year. Percentage change, based on unadjusted data. EU data for 28 countries until 2020, and for 27 countries from 2020
(Source: Eurostat, 2021)

The Figure 4 summarises the employment data for the European Union countries, as well as for the Eurozone countries, in two different time series, whose lines move very much similarly.
It can be easily concluded that crises and employment have a strong dependence on each other. On the one hand, a reduction of employment may trigger an economic crisis. On the other, crises can affect very negatively the employment rate, as is the case of the current pandemic crisis. This was also verified during the 2008 crisis, where the employment values reached some very negative values as well. The recovery from the financial crisis was slow, but steady. Despite some difficulties to fully recover the employment lost, the fact that the 2008 crisis was essentially a financial crisis, being, in some way, predictable and expected, helped to recover in a relatively easy way. However, the 2020 pandemic crisis is of a different nature: an unpredictable crisis, which led to significant abrupt falls of employment in the Euro Zone. For the reasons previously mentioned, and by joint efforts which started in 2021, in order to recover from the effects of confinement and lockdowns, mortality rates and high infections, some significant recovery of employment was achieved.

5. CONCLUSION

The new millennium is being plagued with some severe crises which led to the adoption of ultra-expansionist monetary policies to mitigate the corresponding negative effects. When the economies seemed to finally have the 2008 financial crisis under control, leading the way to a fresh cycle of economic expansion, a new, unpredictable crisis took the world by surprise: the Covid-19 pandemic. In response to such severe pandemic crisis, the governmental, health, and economic-financial authorities had to step in and adopt decisive measures. In fact, one can conclude that the monetary policies adopted by the European Central Bank, in face of the crises and their effects, allowed the countries to mitigate such negative effects, by increasing their spending, while being financed by more public debt, which is being benefiting from lowering interest rates, which are now close to 0%, or are negative even. This scenario is allowing to increase the stock of public debt without increasing the burden of the debt service, i.e. without having to pay more interests. The fact that some countries continue to be benefited from negative interest rates, may not last for much longer, as inflationary pressures are being felt in an increasingly way. Decades of very low interest rates may result in unforeseen consequences for the economy, the society, and even for the planet. In fact, it is yet to be concluded about the consequences of these very low rates in terms of their real long-term economic impacts. Finally, its important to highlight that, unlike the recovery of the GDP growth, whose early pandemic loses could be roughly compensated immediately after, in the case of the employment, only a small portion of the jobs lost with the pandemic crisis has yet been recovered. Furthermore, it seems that will take a very long time recovering to the pre-pandemic levels of employment, if ever!

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LITERATURE:

1. Afonso, A., Furceri, D. (2010), Government size, composition, volatility and economic growth, European Journal of Political Economy: 26(4): 517-532.
2. Amann, J., Middleditch, P. (2017). Growth in a time of austerity: Evidence from the UK. *Scottish Journal of Political Economy*: 349–375.
3. Azam, M., Ibrahim, Y. (2014). Foreign direct investment and Malaysia's stock market: using ARDL bounds testing approach. Journal of Applied Economic Sciences: 9(4)(30): 591-601.
4. Azam, M., Ather, M. A. (2015). Role of Human Capital and Foreign Direct Investment in Promoting Economic Growth: Evidence from Commonwealth of Independent States, International. Journal of Social Economics: 42(2): 98-111.
5. Azam, M., Hassan S., Khairuzzaman (2013). Corruption, Workers Remittances, FDI and Economic Growth in Five South and South East Asian Countries; A Panel Data Approach, Middle-East Journal of Scientific Research: 15(2): 184-190.
6. Azam, M., Ibrahim, Y., Bakhtiar, B. (2014). Foreign Direct Investment and Economic Growth in Asia, Actual Problems of Economics: 11(161): 58-67
7. Bernanke, B. S., Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. The Journal of Economic Perspectives: 9(4), 27–48.
8. Brida, J. G., Gómez, D. M., Seijas, M. N. (2017). Debt and growth: A non-parametric approach. Physica A: Statistical Mechanics and Its Applications: 883–894.
9. Burhanudin, M. D. A., Muda, R., Nathan, S. B. S., Arshad, R. (2017). Real effects of government debt on sustainable economic growth in Malaysia. Journal of International Studies: 161–172.
10. Cafiso, G. (2019). GDP Growth through Private Debt: The Effect of Monetary Shocks. Cesifo Economic Studies: 65(2): 236-253
11. Christiano, L. J., Eichenbaum, M., Evans, C. L. (1999), Monetary policy shocks: What have we learned and to what end? , Handbook of macroeconomics: 65–148.
12. Chiu, Y, & Lee, C.-C. (2017). On The Impact of Public Debt on Economic Growth: Does Country Risk Matter?. Contemporary Economic Policy: 751–766.
13. De Vita, G., Trachanas, E., Luo, Y. (2018). Revisiting the Bi-directional causality between debt and growth: Evidence from linear and nonlinear tests. *Journal of International Money and Finance*: 55–74.
14. ECB (2021). European Central Bank. Eurosystem statistics. Retrieved on several dates. Available at https://www.ecb.europa.eu/ecb/tasks/statistics/html/index.pt.html
15. Esteve, V., Tamarit, C. (2018). Public debt and economic growth in Spain, 1851–2013. *Cliometrica*: 219–249.
16. Eurostat (2021). Eurostat Statistics database. European Union statistics department. European Commission. Retrieved on several dates. Available at: https://ec.europa.eu/eurostat/data/database
17. Huxley, A. (2006). Brave New World. New York, USA: Harper Perennial.
18. Intartaglia, M, Antoniades, A, Bhattacharyya, S. (2018). Unbundled debt and economic growth in developed and developing economies: an empirical analysis. *World Economy*: 3345–3358.
19. Jannsen, N., Potjagailo, G., Maik, H. W. (2019). Monetary Policy during Financial Crises: Is the Transmission Mechanism Impaired? International Journal of Central Banking: 15(4): 81-126.
20. Levine, R. (2005). Finance and growth: theory and evidence, Handbook of economic growth 1: 865– 934.
21. Liaqat, Z. (2019). Does government debt crowd out capital formation? A dynamic approach using panel VAR. *Economics Letters*: 86–90.

22. Mhlab, N., Phiri, A. (2019). Is public debt harmful towards economic growth? New evidence from South Africa. *Cogent Economics and Finance*: 7(1).
23. Muhammad, A., Gavrila, L. (2015). Inward foreign capital flows and economic growth in African countries, Journal of Applied Economic Sciences: 3(33): 362-371.
24. Pegkas, P., Staikouras, C., Tsamadias, C. (2020). On the determinants of economic growth: Empirical evidence from the Eurozone countries. *International Area Studies Review*. 23(2): 219-229
25. Reinhart, C., Rogoff, K. (2009). The aftermath of financial crises. American Economic Review, 99(2): 466-472.
26. Reinhart, C., Rogoff, K. (2010). Growth in a Time of Debt. American Economic Review. 100(2): 573-578.
27. Ribeiro, H., Vaicekauskas, T., Lakštutienė, A. (2012). The effect of public debt and other determinants on the economic growth of selected European countries. *Economics and Management*: 17(3): 914-921.
28. Snieska, V., Burksaitiene, D. (2018). Panel data analysis of public and private debt and house price influence on GDP in the European Union countries. *Engineering Economics*: 29(2): 197–204.
29. Srinivasan, P., Ibrahim, P. (2010). FDI and Economic Growth in the Asian Countries Evidence from Cointegration Approach and Causality Test. The IUP Journal of Management Research: 9(1): 38-63.
30. Srinivasan, P. (2011). Determinants of Foreign Direct Investment in SAARC Nations: An Econometric Investigation. The IUP Journal of Managerial Economics: 9(3): 26-42.
31. Werner, R. A. (1996). Liquidity Watch Report. Tokyo, Japan: Jardine Fleming Securities (Asia) Ltd.
32. Werner, R. A. (2005). New Paradigm in Macroeconomics: Solving the Riddle of Japanese Macroeconomic Performance. Basingstoke, UK: Palgrave Macmillan.

PARADIGM TRANSITION IN KNOWLEDGE CREATION - LEARNING AND TEACHING FORMS IN PANDEMIC TIMES: FACE-TO-FACE TEACHING VERSUS B-LEARNING TEACHING

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ABSTRACT

This article intends to analyze the transition from classroom teaching to b-learning teaching in Social Sciences students, due to COVID-19 pandemic, at Lusófona University of Humanities and Technologies (Lisboa). In methodological terms, an online questionnaire survey was constructed, consisting of three groups of closed-response questions in which students marked their degree of agreement based on a Likert scale and two groups of an open-response questions in which students should indicate the category "strength/weakness" according to their opinion in relation to the listed aspects. This questionnaire survey aimed to understand main challenges that students faced/experienced when moving from face-to-face teaching to b-learning. A total of 210 questionnaires were validated in which students pointed out as weaknesses management organization in adapting to b-learning classes and in changing daily routines, the lack of socialization, the need for greater autonomy and self-discipline and the lack of stimulation by teacher physical presence. As strengths, most of the students pointed out that practical classes through face-to-face teaching lead to better results, tests and exams carried out in person, face-to-face teaching monitoring in curricular units that offer greater difficulties, expansion of some classrooms to ensure safe distance that is required in this situation. Most students agreed that University immediately equipped the classrooms with equipment that allows transmission of live classes, the security of knowing that University provides psychological support, part of classes being in person, mainly practices, avoided the possibility from dropping out courses, the teachers' fast adaptation to distance classes and face-to-face tests. However, most of them disagreed with the existence of followed classes without time breaks.

Keywords: *students, teaching, online, b-learning*

1. INTRODUCTION

Due to COVID-19 pandemic, universities in Portugal in March 2020, were forced to move from face-to-face teaching to distance learning and then many of them adopted b-learning. Suddenly, students and teachers had to adapt to a new model, transposing everything they used to did in face-to-face teaching to online teaching, through zoom platform with synchronous classes and with Moodle help. In September 2021, classes were adapted to mixed education model, which combines face-to-face and distance learning (blended learning, or b-learning), greatly reducing the number of students hours spend at the university and promoting contact between student and teacher due to the division of classes, being weekly rotating scheme between students who watch in person and in streaming (online classes).

This was mainly due to two factors: not being possible to increase the number of teachers and increasing the space of classrooms, which was some of the main limitations to a total return to classroom teaching. Teaching in e-learning is synchronous through Zoom videoconferencing with asynchronous e-learning through Moodle platform (Modular Object Oriented Dynamic Learning Environment). With the pandemic, the library, bars and university canteens allow only a third of students and exclusively to pick up books and meals. Students were no longer able to study and socialize at the University. The COVID-19 pandemic led universities to adopt a new teaching-learning strategies, a new way of conceiving the educational process in a synchronous and asynchronous time and space. Distance learning expands learning spaces and diversifies forms of communication through access to new forms of interaction and learning, expanding study opportunities to a wider population without daily journeys to university, such as international students and working and non-working students who have their schedules.

2. LITERATURE REVIEW

In fact, distance learning in the world is not as recent as the majority advocates, with almost three centuries of history of this type of education. At the beginning of the 18th century, Boston newspapers were already announcing the shorthand course in this modality. During the 19th and 20th centuries many schools and universities adopted correspondence teaching. From the beginning of the 20th century until the second world war, several experiments were adopted, developing methodologies applied to teaching through mass correspondence such as television, internet or radio. The 21st century is an age of web-based information, where we are witnessing an exponential growth of information and communication technologies. Therefore, it is essential to accompany this evolution through innovative and quality education that provides autonomous learning using different means and forms of communication. In this way, web-based distance education emerges, which, according to Paulsen (2002), is characterized by the separation between teacher and student, the use of a computerized network to present syllabus and bidirectional communication so that students can communicate with each other and with the teacher. Distance education, computer-mediated communication, for educational purposes brought with it issues relating to teaching and learning at distance. Distance education constitutes a new professional configuration, a possibility for the effective exercise of teaching and for the effective construction of knowledge from a different spatio-temporal logic, without losing sight of the objective conditions of social life, in particular new forms of sociability arising from broader social changes, strongly marked by technological presence. Distance learning is the application of a set of methods, techniques and resources made available to students so that, in a self-learning regime, they can acquire knowledge from the didactic elements provided by teacher. As a bidirectional technological system that replaces personal interaction in the classroom between teacher and student, separated by distance, the means of instruction used can be any electronic technology (video, print and voice) and the communication is interactive between teacher and student, which can be in real or virtual time. It is aimed for a dispersed student population, having a strong component of different levels and learning styles. The integration of technologies is essential for a country development through people formation, who are better prepared for the world of work that is constantly changing. Currently, the great demand for development in individuals with education is great, in several areas and with great communication skills. In this context, distance education systems allows learning to occur at the same time, everywhere, appear as a benefit to this range of information. Teaching is almost entirely web-based along with sophisticated means such as videoconferencing, like Colibri/Zoom platform. It appears that characteristics of distance education are different from those of face-to-face teaching, as they may even have same objective, which is the transmission of knowledge, but they differ a lot from each other in the way this knowledge is transmitted.

Success of distance learning is directly linked to several factors, emphasizing tools that are used, such as the way teacher conducts his class and, above all, student's motivation to take courses. Student has to have a higher level of motivation and greater learning autonomy, as well as having to manage their time, being also obliged to develop independence and work skills. The main difference between face-to-face and distance education is that, in distance education, there is a lack of face-to-face contact, students have access to knowledge and develop habits, skills and attitudes related to study and their own life, in real time and place that are suitable for it, not with full-time help of a teacher, but with the mediation of teachers working at distance and with the support of systematically organized teaching materials, presented in different information supports, used separately or in combination through different means of communication. Otto Peters (2004), when discussing concepts and models of distance education, makes clear the differences between this modality and face-to-face education in classroom, "it's a totally different approach, with different students, goals, methods and above all, different goals in educational policy. After distinguishing and characterizing some models of distance education, it makes reference to a global system of online distance education". E-learning is characterized by physical separation between student and teacher through electronic resources, which involves the use of computer networks, computer experiments, making activities available to dispersed students. Added to the e-learning system, we have a multitude of services that can be synchronous, allowing real-time interaction, such as through the Colibri/Zoom platform. We also have asynchronous communication systems, which are those in which the student can send their questions and wait for answers, such as email or discussion forums via Moodle platform. The e-learning modality represents greater flexibility in access to teaching and contents, possibility of interactivity, possibility of access from anywhere and speed in communication. However, there is a lack of human contact and the need to purchase equipment to access resources. With technological advances, e-learning has acquired new particularities, such as blended learning modality, allowing for mutual flexibility for students and teachers, because it combines classroom and online training. For Bottentuit Júnior, Coutinho and Alexandre (2006), the advantages of these systems for education are several, if we take into account the mobility with which students can easily access more current information on various subjects, thus also allowing direct interaction with teacher, who can be communicating with students in real time. In Moodle environment we find several synchronous and asynchronous tools, which are used in course activities, such as forum, chat, student profile, texts and movies. Thus, with these tools, a teaching-learning environment is conceived, facilitating communication via Internet, which increasingly becomes a familiar means of supporting the structuring of a new educational proposals. Since the beginning of the COVID-19 pandemic, distance education has promoted a revolution in the current educational paradigms, as it presented several opportunities for universities to integrate and enrich teaching materials, providing new tools for interaction and communication between teacher and student. Thus, students and teachers interact in distance activities, carry out work to build knowledge in an open and free way, inherent in this environment, the importance of unrestricted educational work and teaching with a more dynamic, innovative, participatory and creative methodology. The traditional pedagogical approach centered on transmission, in which content passes directly from the teacher to the student, gave rise to a new situation mediated by technological innovations in an integrated manner, expanding contexts of student training and creating a broad learning environment, complex and, at the same time, flexible, within a new approach that seeks to enhance a process that generates autonomy, which is a crucial element and at the same time desired in communities and in distance education.

3. METHODOLOGY

For this study, an online questionnaire survey was carried out among students, in which a sample of 210 was obtained (55.5% were female and the age, 71.5% were between 19-25 years old). Data were collected from April to June 2021 and thus a non-probabilistic convenience sampling was adopted. The questionnaire was structured in three groups of closed-answer questions in which the students marked their level of agreement on various Likert-scales: None, Little, A lot, I don't know how to answer; Never, Rarely, Often, Always; Strongly disagree, Disagree, Neither disagree/nor agree, Agree, Strongly agree. And two closed questions in which students should indicate the category "strength/weakness" depending on their opinion in relation to the listed aspects. This investigation aimed to understand how students from various courses in the area of Social Sciences have adapted to the context of b-learning teaching, that is, face-to-face classes and distance classes through Zoom platform with Moodle, simultaneously. Data were analyzed using the SPSS (Statistical Package for Social Sciences – version 24) in the case of answers to closed questions, using the technique of content analysis for answers to open questions. To analyze data obtained from the closed questions, descriptive statistics such as frequencies, means and standard deviations were used.

4. MAIN RESULTS

As weaknesses, 72.7% of students pointed out the difficulty in managing their time in the preparation of work at home isolated from their colleagues and in the new routine when traveling to university and having classes at home at the same time. Almost all students (96%) stated that the biggest weakness is the need for many hours sitting at the computer to attend classes and 97% feel the lack of socialization with colleagues and teachers. But it is relevant that 46.5% of respondents considered the greater availability of time to study a strength because they are not on average two hours on public transports. 63% miss the stimulus of the physical presence of the teacher in online classes and 54% felt the lack of self-discipline and autonomy, pointing out as weaknesses. As strengths, 92% of the students stated that practical classes being presential lead to better results, being one of the main factors to continue in courses. Another strong point that 61% of the students pointed out is the presence of tests and exams, beacuse they showed many fears in doing the same through Moodle platform for fear of losing the internet and having a time accounted for each of the exam questions. 97% of students pointed out which is a strong point the face-to-face teaching monitoring in curricular units that offer greater difficulties and 74% recognized the university's efforts to expand some rooms and build others to ensure the required safety distance. And 67.9% of students pointed out as a strong point the high level of teachers involvement and their concern in adapting to online teaching. Only a minority showed negative perceptions (7.1%), reporting little involvement. The majority of students (89%) agreed that it was immediately that university equipped the classrooms with equipment that allows the transmission of live classes to students who are at home, 68% agreed that they feel more comfortable in knowing that the university provides psychological support, 91% fully agreed that part of the classes are in person, mainly the practical ones, avoiding the possibility of dropping out courses and because the classrooms are large enough, 78% of the students agreed that teachers quickly adapted to distance classes. And 75% fully recognized that the adaptation to the new teaching modality was a success, noting that it was due to the fact that the classes were in person. About 21% of students agreed to have considered leaving the degree after the pandemic starts for reasons related to the course, such as the fear of not adapting to b-learning teaching, not properly apprehending part of the contents taught through Zoom platform or decrease school performance. According to students/respondents, the support was more relevant with regard to the availability for clarification of support from teachers. In this regard, when asked to express their degree of agreement in relation to the statement "I feel informed about the activities/works I have to perform in view of the distance learning situation",

66.7% express agreement, which it translates into an effective communication of guidelines in relation to the situation of distance learning. However, 81% disagreed with the existence of part of the classes being followed without time brakes.

5. CONCLUSION

The abrupt change from face-to-face teaching to b-learning as a consequence of the COVID-19 pandemic led to profound changes in teaching-learning practices, representing some challenges, including online communication methods and collaborative learning. Compared to face-to-face teaching, there are some specific skills of online education, such as the technological infrastructures level of quality, for example, the existence of broadband network systems; pedagogical resources and e-content – the need to make contents available in the form of teaching materials that facilitate a more autonomous learning process based on self-study. It is considered a positive perception regarding support that teachers gave to students in the transition of changing teaching modalities.

LITERATURE:

1. Aucejo, E. M., French, J., Araya, M. P. & Zafar, B. (2020). The impact of COVID-19 on student experiences and expectations: Evidence from a survey. *Journal of Public Economics*, 191, November 2020, 104271. https://doi.org/10.1016/j.jpubeco.2020.104271 26 de 28
2. Avalos, B. & Flores, M. A. (2021). School-based teacher collaboration in Chile and Portugal, Compare. *A Journal of Comparative and International Education*. https://doi.org/10.1080/03057925.2020.1854085.
3. Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior & Emerging Technologies*, 2(2), 113–115. https://doi.org/10.1002/hbe2.191.Barras
4. Bottentuit, J., Coutinho, C. & Alexandre, D. (2006). M-learning e webquests. As novas tecnologias como recurso pedagógico. *Proceedings of 8th International Symposium on Computers in Education* (SIIE2006). Vol. 2, (pp. 346-353). León: Servicio de Imprenta de la Universidad de Léon.
5. Bozkurt, A. & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, 15(1), i-vi.
6. Carrillo, C. & Flores, M. A. (2020). COVID-19 and teacher education: a literature review of online teaching and learning practices, *European Journal of Teacher Education*, 43(4), 466-487. https://doi.org/10.1080/02619768.2020.1821184.
7. Cutri, R. M., Mena, J. & Whiting, Education International (2020). Guiding principles on the COVID-19 pandemic, https://www.ei-ie.org/en/detail/16701/guiding-principles-on-the-covid-19-pandemic.
8. Ferdig, R. E., Baumgartner, E., Hartshorne, R., Kaplan-Rakowski, R. & Mouza, C. (Eds). (2020). Teaching, Technology, and Teacher Education During the COVID-19 Pandemic: Stories from the Field. *Association for the Advancement of Computing in Education* (AACE). https://www.learntechlib.org/p/216903/.
9. International Association of Universities (2020). Regional/National Perspectives on the Impact of COVID-19 on Higher Education. Retirado de https://www.iau-aiu.net/IMG/ pdf/iau_covid-19_regional_perspectives_on_the_impact_of_covid-19_on_he_july_2020.
10. König, J., Jäger-Biela, D. J. & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: Teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education*, 43(4), 608–622. https://doi.org/10.1080/02619768.2020.1809650.

11. Moorhouse, B. L. (2020). Adaptations to a face-to-face initial teacher education course 'forced' online due to the COVID-19 pandemic. *Journal of Education for Teaching*, 0(0), 1–3. https://doi.org/10.1080/02607476.2020.1755205.NFER (2020). Schools' Responses to Covid-19. Pupil engagement in remote learning.https://www.nfer.ac.uk/schools-responses-to-covid-19-pupil-engagement-in-remote-learning/.
12. Peters, O. (2003). *A educação a distancia em transição*. São Leopoldo: Ed da Unisinos.
13. Paulsen, M. (2002). E-learning: o papel dos sistemas de gestão da aprendizagem na Europa. *Colecção formação a distância & e-learning*, Inofor, p. 21.
14. Pretto, L., Jr. (1999). A ICT in Education: Challenges for the Curriculum. www.ufba.br/~pretto.
15. Zhang, W., Wang, Y., Yang, L. & Wang, C. (2020). Suspending Classes Without Stopping Learning: China's Education Emergency Management Policy.

TRANSFORMATION OF MOVIE RECEPTION – EXAMPLE OF MARVEL CINEMATIC UNIVERSE

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ABSTRACT

The primary goal of this paper was to display how Marvel Cinematic Universe affected and changed the views and reception of the public towards movies based on comic books. It has also revealed how the Internet affected movie reception by the public, while also listing the changes that the global network brought into the movie world. Our focus was oriented towards exploring the relationship between the film industry and movies based on comic books, simultaneously exploring the phenomenology of comic books and explaining the evolution of comic books from literature to the cinema. The paper analyses public reception of all the movies published within the Marvel Cinematic Universe following the same way Marvel approached their vast cinematic universe - in four distinct stages. Each section lists the integral parts of the movies contained within it, while the display of public reception rests on critical summaries and reviews that are available on the Internet. The perception of the Croatian audience was also researched through a short survey. The paper analyses the public opinion, but also the so-called „non-movie-related" elements that are not directly tied to the MCU, still playing an important part in it nonetheless (market changes, global changes, pandemic challenges, digital transformation…).

Keywords: *comic book, film industry, Marvel Cinematic Universe, public opinion, public reception*

1. INTRODUCTION

The emergence of the internet has brought many changes to the film industry – the production of films/series has evolved to take full advantage of the internet, new channels have been created that allow access to this content and audience expectations are growing almost as fast as the internet. These circumstances served as a breeding ground for an unexpected and unprecedented growth of popularity of comic book-based movies, or more precisely, movies of the Marvel Cinematic Universe (hereinafter referred to as MCU). This impressive group of as many as 23 films and 3 series (at the time of writing of this paper), which entered the film

industry in 2008 and threw the world into a superhero ecstasy, which shows no signs of weakening 13 years later, is the focal point around which the transformation of the reception of superhero movies under the influence of the internet and new media will be examined. It is also closely associated with the main hypothesis of this paper – the Marvel Cinematic Universe is credited with the positive transformation of the reception of comic book-based movies through the internet.

2. CHANGE IN THE HORIZON OF EXPECTATIONS OF MEDIA AUDIENCE

With the emergence of technology-enriched media, cultural content as well as its consumption and reception have changed forever. Thanks to specialised platforms such as IMDb[1], the world of culture is enjoying all the benefits specific to the mass media: archives, multimedia, correlation, interactivity. Reflecting on the words of one of the main reception theorists Hans Robert Jauss, it can be concluded that it is a relationship between the work and the audience, i.e. the user, on a synchronic level - the user's encounter with the work, or in this case, the media publication, takes place at the exact moment the user decides to „surf" the internet.

2.1. The need to adjust as key to success

One of the most influential, most profitable and most popular movie ventures of the present, Marvel's film universe, globally known as the Marvel Cinematic Universe or MCU, is the most successful movie franchise of all time at the time of writing of this paper, generating more than 22 billion dollars at the global level. Successfully completing the biggest, most expensive and most cost-effective phase so far, Marvel Studios shows no signs of slowing down, announcing as many as 10 new movies and several different series that will be streamed exclusively via the Disney+ platform along with planned release dates. If everything had gone according to plan, they would have already had two new films by now. However, coronavirus had different plans, which affected Marvel in the same way as it affected the rest of the world – it quarantined Marvel and forced them to change plans and come up with some new, creative solutions. However, while many other studios and production companies from the world of film have found themselves in an unfavourable position where, even if they had managed to make a movie complying with certain conditions, they had not been able to screen it profitably because cinemas were mostly closed, Marvel managed to find a „loophole in the system". With their series *WandaVision*, *The Falcon and the Winter Soldier,* and *Loki*, they managed to stay not only up-to-date and relevant in the world of entertainment, but also extremely successful. These series were an interesting experiment – how will the strictly cinematic universe function with episodic stories? The answer is – obviously much better than expected. Each of these series has managed to attract many fans of the „standard" Marvel, and the stories they tell only further upgrade already familiar characters and stories. After a „temporary" lockdown, which lasted throughout 2020, Marvel is slowly returning to the big screen, and the first movie after an unplanned break, *Black Widow*, came out on 9 July. Critiques and impressions of the second MCU movie with the female lead are diverse so far, but the final judgment is to be waited until the most famous Russian spy Natasha Romanoff (played by Scarlett Johansson probably for the last time) passes through cinemas around the world. However, even if the latest addition to the great MCU does not satisfy fans, they have a whole list of upcoming movies, some of which deal with old characters, and some with brand new ones, which they can look forward to. As Kevin Feige, number one and the lead producer of all Marvel Cinematic Universe movies, recently said on Rotten Tomatoes: „For us, Phase Four has always been just a continuation of our stories, but in a new and different way.

[1] IMDb is the world's most popular and authoritative source for movie, TV and celebrity content, where you can find ratings and reviews for the newest movie and TV shows (description taken over from the IMDb website).

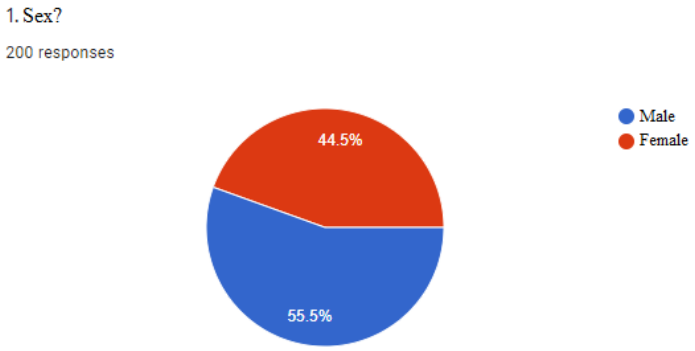
Even movies that, at first glance, end the previous stories, contain new beginnings and that is the most exciting part of this experience and our cooperation with the Disney+ platform."[2]

3. EXAMINING ATTITUDES OF CROATIAN AUDIENCE

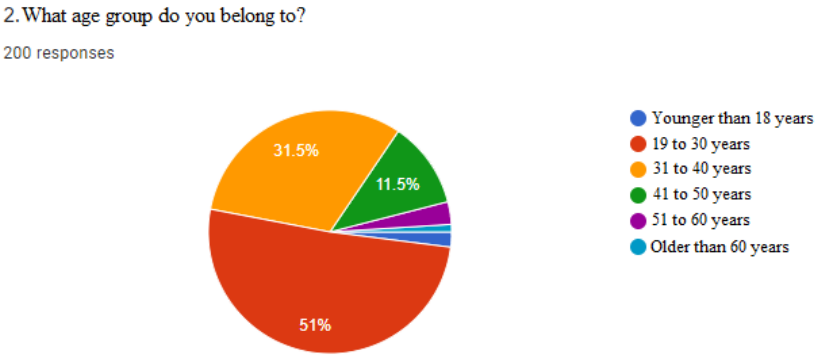
The primary goal of this survey was to examine the current status of the Marvel Cinematic Universe on the Croatian movie market. The survey was completed by 200 respondents in the period from 1 to 5 September 2021. Most of the respondents have a similar background; more precisely, they are members of the Facebook group GOODtalking. According to its founder Tihomir Polančec, it is a group intended for all fans of movies and TV shows. Given that this paper is based on the research of the movie and its reception, the above-mentioned group is considered the best choice for forming a kind of a "focus group", on whose answers conclusions will be based. Furthermore, it is assumed that movie fans would be particularly interested in a survey on this topic, so gathering a larger number of respondents would not be an impossible task. This assumption was correct. The survey[3] consisted of 20 questions ranging from general information about the respondent to questions asking them to explain briefly some of their answers to multiple-choice questions.

3.1. General questions

The first three questions related to the general data about the respondent that were intended to give a clear picture of the „public" that completed this survey.

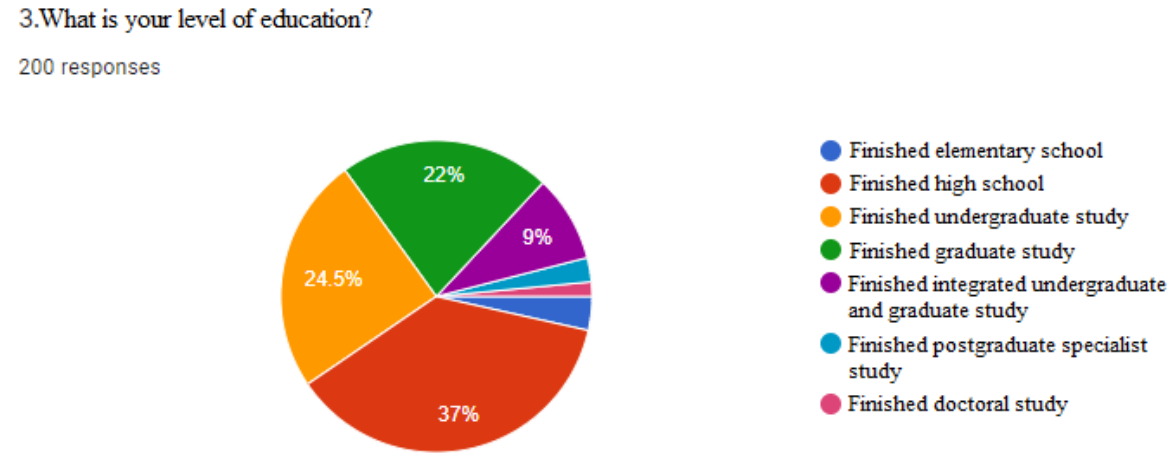


Graph 1: The participants' sex



Graph 2: The participants' age group

[2] Full interview with Kevin Feige can be found at https://youtu.be/aZZ_PWwbjb4.
[3] The spreadsheet of the entire survey is available at https://docs.google.com/spreadsheets/d/1Wzt3iaZKuYNMILk1Q0wfGLHini20xrgj0nAhoIa_kPM/edit.

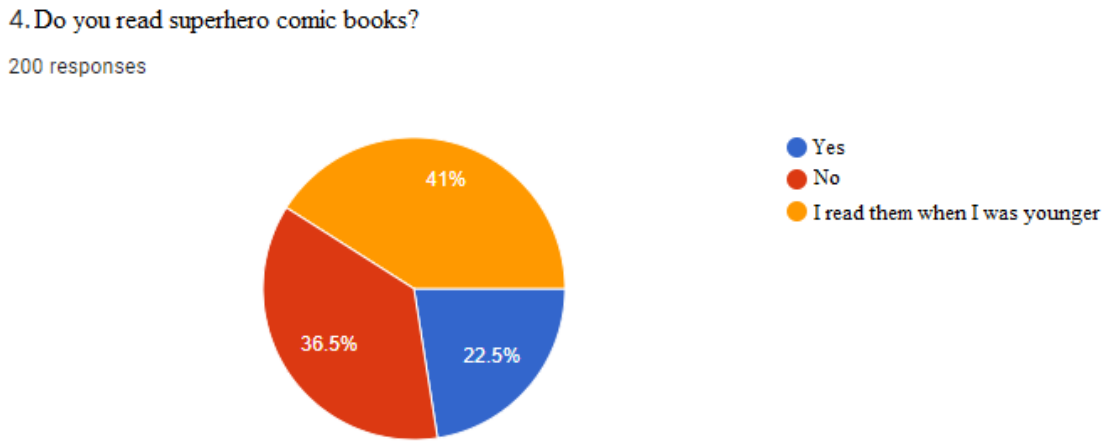


Graph 3: The participants' level of education

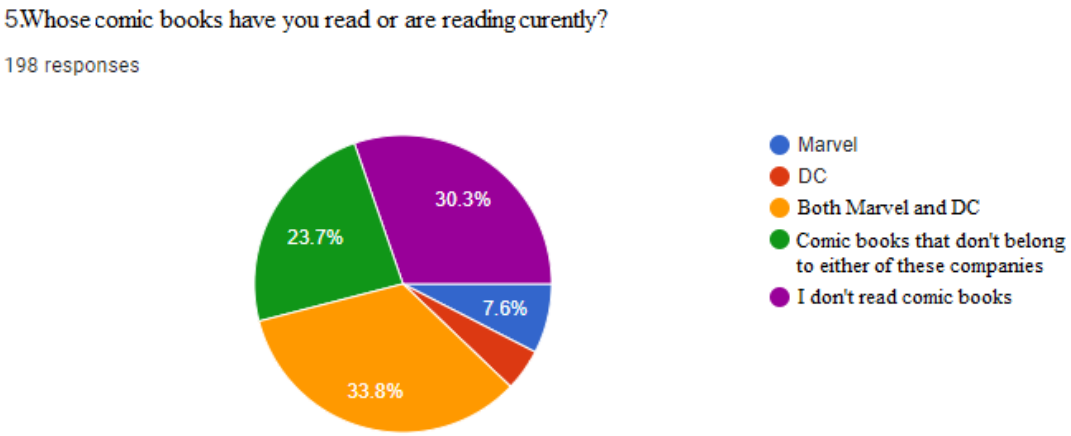
These graphs illustrate the following: of 200 respondents, 55.5% are men and 44.5% are women. The age distribution of respondents consists of several categories, as follows: 51% of respondents belong to the category 19 to 30 years, 31.5% to the category 31 to 40 years and 11.5% to the category 41 to 50 years. The remaining three groups are significantly less represented, as shown in the graph. The graph presenting the third question provides the following information: 37% of respondents have finished high school, 24.5% have finished undergraduate study, 22% have finished graduate study, and 9% have finished integrated undergraduate and graduate study. Other categories presenting the participant's level of education (finished elementary school, finished doctoral study and finished postgraduate specialist study) are much less represented.

3.2. Reading habits of respondents

The following four questions (4 – 7) relate to gaining insight into the reading habits of respondents, more precisely, whether they read or have previously read comic books about superheroes, on which the subject of the survey is based. These questions are also aimed at examining the general attitudes of respondents towards superhero movies before the emergence of the Marvel Cinematic Universe.



Graph 4: Do the participants read comic books?



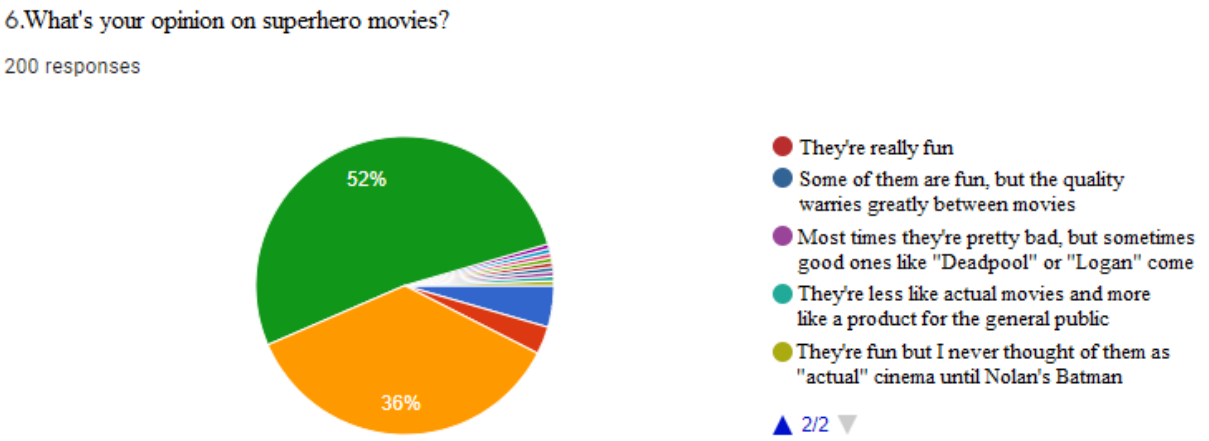
Graph 5: Whose comic books do participants read or have they read?

Regarding the question „Do you read superhero comic books?", 36.5% of respondents had a negative answer, 41% of them read them when they were younger, and the lowest percentage of respondents (22.5%) still read them today. The largest proportion of readers (33.8%) read or have read comic books of both sides of the most famous rivalry in the world of comics; Marvel's and DC's. A total of 30.3% of respondents once again stated that they do not read comics, while 23.7% of respondents stated that they read or have read comics that do not belong to any of these two companies. This leads to the first interesting observation relating to the survey; as many as 77.5% of respondents no longer read or have never read comics, while only 7.6% of them have read exclusively Marvel's publications. Despite this, as many as 81.5% of respondents answered „Yes" to the question „Do you watch movies that belong to the Marvel Cinematic Universe?" (graph below). Already at this moment, it is noticeable that many current Marvel fans appeared when MCU started their rise on the big screen, while a smaller number of them developed love for superheroes because of original releases. Of course, it is clear that slightly less than 70% of respondents liked to read comic books in some format even before MCU, but we consider it worth mentioning that few were exclusively readers of Marvel comic books.

3.3. Value judgement of Marvel movies

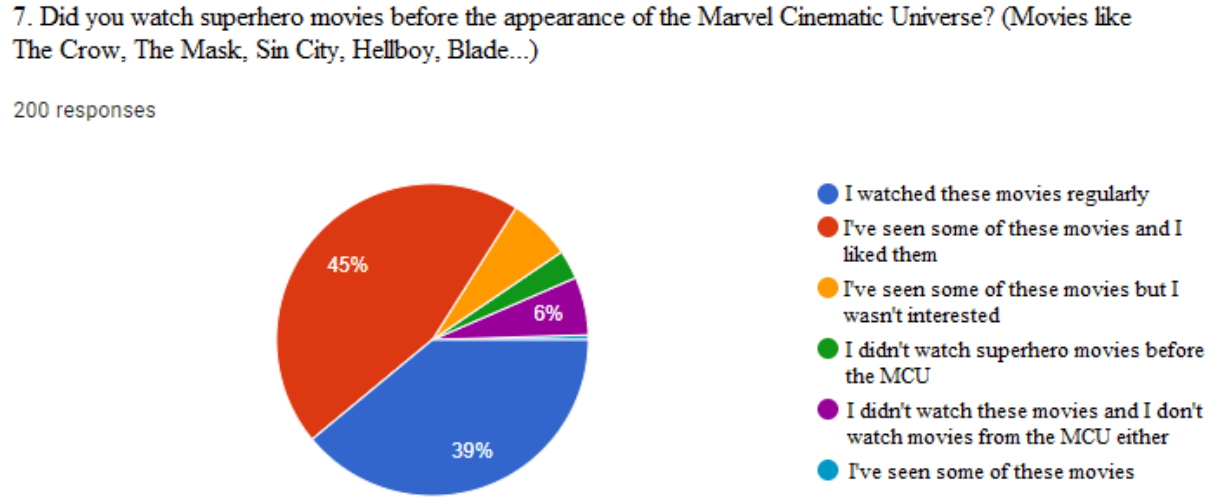
The sixth question offered the option of writing one's own answer in case none of the offered answers was satisfying. The green colour on the graphs indicates the answer „They are fun and have interesting themes" (52% chose this option), while the orange indicates the answer „They are fun, but I do not consider them serious" or some version of this answer, which was chosen by 36% respondents. As already noted, there are those who think that superhero movies are much less serious than „ordinary" movies (with some exceptions such as Christopher Nolan's „The Dark Knight" and Todd Phillips' „Joker"), so some questions offered an option representing that view. A somewhat more extreme version of this view is „I consider them less valuable than movies from other genres," which is indicated by the red colour (3%). The blue colour indicates the answer „I do not find them interesting" (4.5%).

Graph following on the next page



Graph 6: The participants' opinion on superhero movies

The seventh question deals with comic book movie adaptations before the MCU.



Graph 7: Superhero movies before the MCU

The most common answers to this question were the following: „I have seen some of these movies and I liked them" (45%) and „I watch these movies regularly" (39%), while other answers remained mostly poorly represented, with the exception of the answer „I did not watch these movies, and I do not watch movies from the MCU either", which was chosen by 6% of respondents. It is noticeable that a larger number of respondents were eager for quality comic book movie adaptations and their colourful (or extremely monochromatic) heroes even before the MCU. Considering that, it is no surprise that Marvel was welcomed with so many „open arms" when they decided to start adapting comic books into movies. The following two questions were an introduction to the questions related to the Marvel Cinematic Universe.

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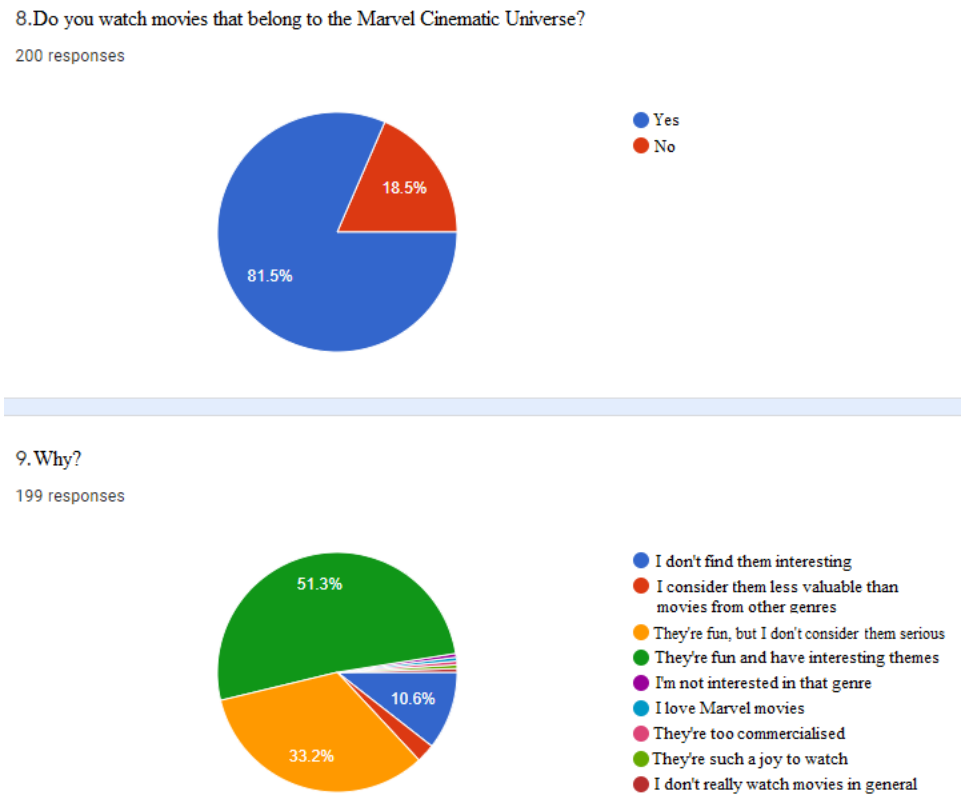
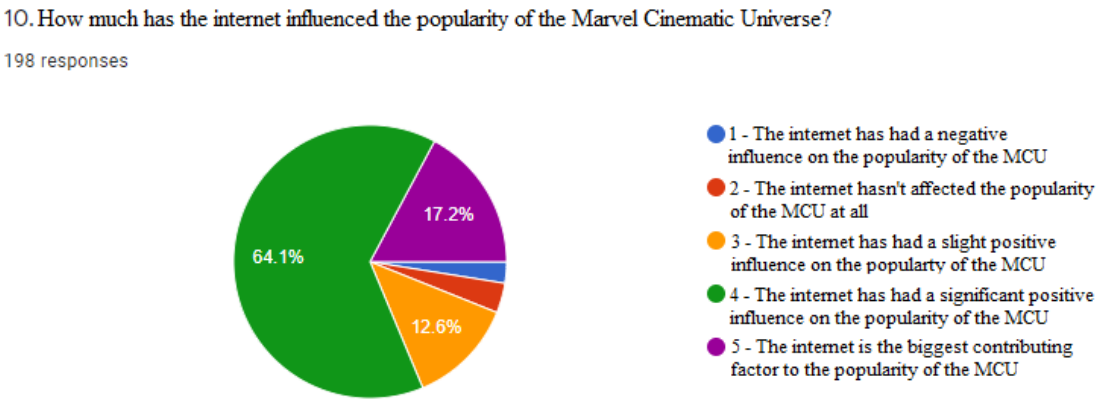


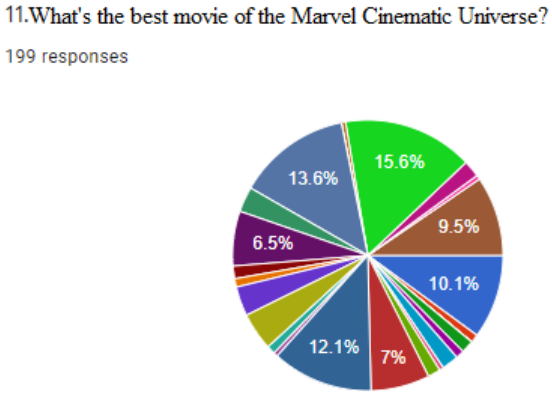
Graph 8: Why do the participants watch/do not watch movies from the MCU?

The eighth question gives a good insight into the number of Marvel fans. Out of 200 respondents, as many as 81.5% watch these movies, and only 18.5% do not. The reasons why people watch MCU movies vary considerably and it can be seen from the ninth question that many watch them because they think they are interesting and have interesting themes (51.3%), while 33.2% watch them because they are interesting, but they do not consider them serious. As regards higher percentages, it is worth mentioning 10.6% of respondents who chose the answer „I do not find them interesting". In the tenth question, respondents were asked to rate from 1 to 5 the extent to which the internet had an impact on the popularity of the Marvel Cinematic Universe.



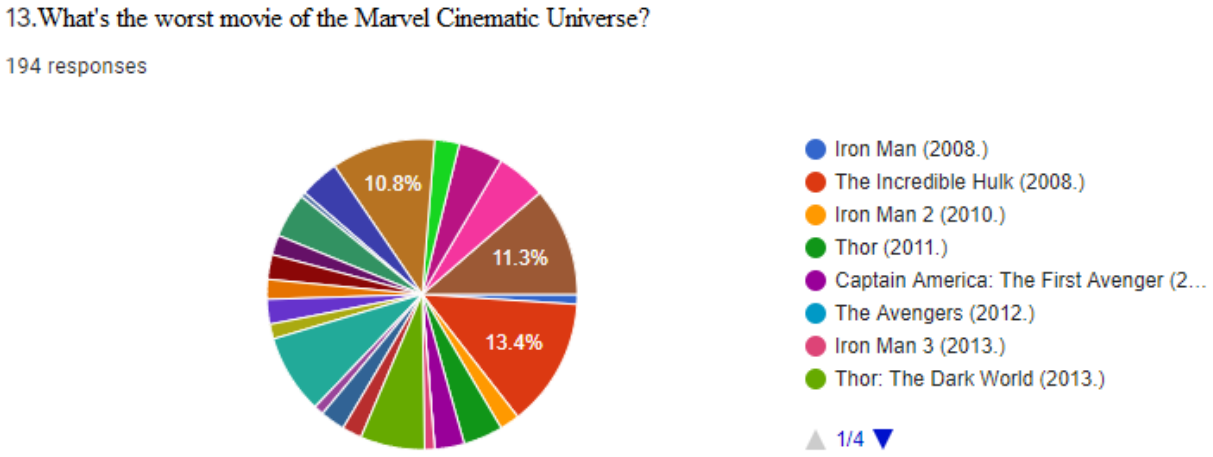
Graph 9: Influence of the internet on the popularity of MCU according to respondents' opinion

The largest percentage of respondents (64.1%) opted for point 4, which represents the statement „The internet has had a significant positive influence on the popularity of the MCU". The answer under point 5 („The internet is the biggest contributing factor to the popularity of the MCU") was significantly less represented, as it was chosen by 17.2% of respondents, as well as the answer under point 3 („The internet has had a slight positive influence on the popularity of the MCU"), which was chosen by 12.6% of respondents. It is noticeable that an extremely small number of respondents chose answers representing the views that the internet had no influence or that it had a negative influence on the popularity of the MCU. In the following six questions (11 – 17), respondents were asked to choose one option from several possible ones (questions had more than 20 options, as respondents were asked to choose one of the MCU movies according to different criteria).



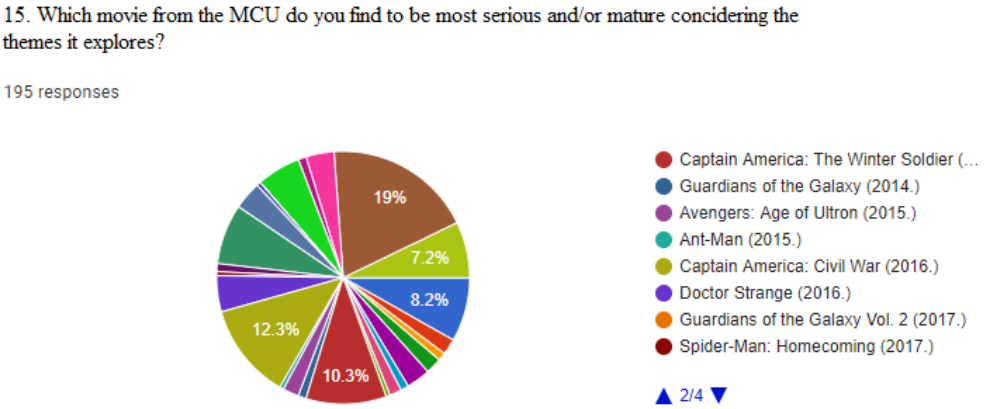
Graph 10: The best movie of the MCU

The distribution of respondents according to their choice of the best MCU movie was as follows: 15.6% – Avengers: Endgame (2019), 13.6% – Avengers: Infinity War (2018), 12.1% – Guardians of the Galaxy (2014), 10.1% – Iron Man (2008), 9.5% – „I am not interested in Marvel movies", 7% – Captain America: The Winter Soldier (2014), 6.5% – Thor: Ragnarok (2017). These results show that the respondents in this survey generally have quite similar views as the rest of the world; the Russo brothers' Endgame and Infinity War are the most impressive examples of Marvel's filmmaking.



Graph 11: The worst movie of the MCU

On the other hand, the distribution of respondents according to their choice of the worst MCU movie was as follows: 13.4% – The Incredible Hulk (2008), 11.3% – „I am not interested in Marvel movies", 10.8% – Captain Marvel (2019), 8.2% – Ant-Man (2015), 6.7% – Thor: The Dark World (2013), 5.2% – Black Widow (2021). It is a well-known fact that Norton's Hulk did not impress many when it first appeared on the big screen as part of the MCU, which is confirmed by the above graph. In addition, the ungrateful position in which Captain Marvel found herself (the movie was released between Infinity War and Endgame, the two biggest and most beloved movies of this franchise) did not help much in her ranking on this and similar lists. After examining the best and the worst that Marvel has to offer, we have decided to examine what respondents think about Marvel's ability to handle more serious topics and issues through the narrative. The goal of this question was to gain additional insight into what the public thinks about the combination of serious topics and superheroes.

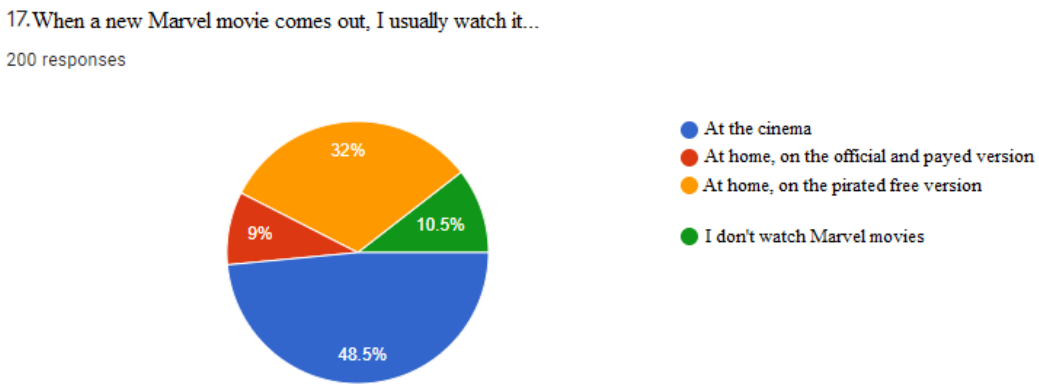


Graph 12: The most serious/mature movie of the MCU

This question had some surprising results; 19% of respondents answered: „I do not think that any of these movies deals with serious topics", which is by far the largest share of all the answers to this question. Furthermore, Captain America: Civil War (2016) was chosen by 12.3% of respondents, followed by Captain America: The Winter Soldier (2014) with 10.3%. Iron Man (2008) was chosen by 8.2% of respondents and Black Panther (2018) by 7.7%. It is also worth mentioning that 7.2% of respondents chose the answer „I am not interested in Marvel movies".

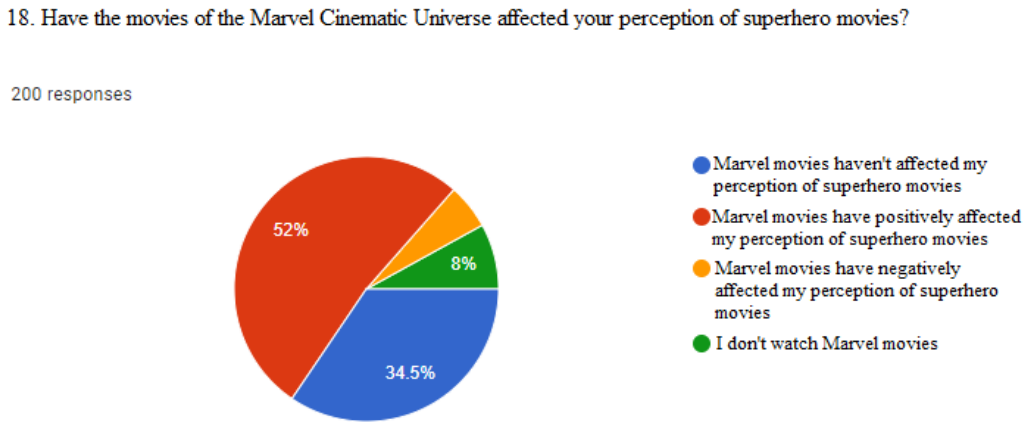
3.4. Economic and social aspects

The remaining four questions (17 – 20) deal with certain economic and social aspects of the relationship between MCU and its many fans.



Graph 13: Where and how do the participants watch Marvel movies

Almost half (48.5%) of respondents usually watch new Marvel movies at cinemas, while 32% of them still decide to save some money and wait for the illegal version to appear on pirate sites. Only 9% of respondents watch new movies at home, as official and paid version. This graph is just an additional proof that Marvel continues to fill cinemas with no trouble, thus making big profits, and even if some of the fans do not want to spend money on a ticket, they will often watch the latest MCU's release as soon as it appears on torrent sites. Therefore, the internet has once again proven to be a necessary part of Marvel's impressive range.



Graph 14: Marvel movies and the perception of superhero movies

As many as 52% of respondents state that Marvel movies have positively affected their perception of superhero movies, while 34.5% of them believe they have not affected their perception. Only 5.5% of respondents believe that Marvel movies have negatively affected their perception of such movies. Based on this graph, it can be concluded that the success of Marvel and MCU is a success at the level of all movie adaptations of superhero comic books; thanks to this achievement, a large part of the public is much more open to new movies and series about superheroes. This is evident from the fact that the public sphere is full of such content; not only in cinemas but also on streaming services (The Umbrella Academy on Netflix, The Boys on Amazon Prime, WandaVision, Loki, and Falcon and The Winter Soldier on Disney+). In addition, working with the MCU has allowed directors such as James Gunn to share their vision of the superhero genre with the public, and due to the success they have achieved with Marvel, they have gained media space to show their talents in directing superhero adventures outside the MCU. The most recent proof of this fact is the success of the Gunn's Suicide Squad. The survey ends with a simple question: „Do you think Marvel's success will continue?" Out of 200 respondents, as many as 81.4% answered „Yes", while only 11.1% answered „No". The rest of the respondents (7.5%) once again opted for the answer „I do not watch Marvel movies".

4. SPECIFIC METHODS OF MARKET EXPANSION

As all other profit-dependent companies, Marvel wants to make as much money as possible from the „products" they generate and sell. Superhero figures, video games, cards, board games, etc. are all additional sources of profit that, along with multimillion-dollar earnings from movies, generate an enormous amount of profit for Marvel, which then uses that same profit for further growth and system development. In short, it is a vicious circle that feeds itself – the more successful and popular the movies, the more all these by-products (including comic books) will be sold. The higher the sale of all these props and relics, the greater the reach of the superhero franchise. Observed from a market standpoint, merchandising is a brilliant process that takes the best of global popularity and turns it into sheer profit.

Related to this is the development of the so-called „meme culture", i.e. the constant process of creating, publishing and forwarding various funny photos or gifs that comically mock/show a certain concept/phenomenon/person or anything else. Of course, memes are not strictly limited to only superhero topics or Marvel products, but it is impossible to write about them without mentioning the impact they have on spreading information about the MCU. It could be said that memes are a form of free marketing that, although peculiar, can effectively evoke interest and attract „new members" of the massive Marvel fan community, who then eventually become part of the massive machinery and steady profit-generating mechanism.

4.1. Multi-level transformation of reception

It is easy to see how a franchise with such a long reach managed to have such an impact on the public reception, but we should not forget the impact it had on the study of movies via the internet. There is no doubt that film is one of the most influential art forms of modern times. Films transcend time, geographical distance, language barriers and political strategies, they enable a unique form of expression and communication of the creator with the audience, and constantly expand the boundaries of the possible. As such, ever-changing and fascinating depictions of the uniqueness of the human mind, movies attract a multitude of people to study and elaborate them down to the smallest detail. It is in such situations that these individuals (critics, reviewers, film theorists…) use the internet to substantiate their critical judgment with facts and technical data related to the movie they are „processing". Specialised sites, such as the aforementioned Internet Movie Database (IMDb), serve as oases of easily accessible and trustworthy data that complement such texts. Furthermore, in just a few minutes, we can use the internet to find literature that can help us to better understand the film art and we often have the opportunity to immediately access such material in pdf format. However, even though an individual is only interested in film as a form of entertainment and has no interest in deeper research, they can always rely on the value judgment of others; critics and reviewers who make a living by publishing content on specialised portals. Nevertheless, since this paper is based solely on the film material covered by the Marvel Cinematic Universe, we decided to take as an example the content that is also specifically focused on the above-mentioned. It is no secret that YouTube has become a real haven in recent times for amateur film critics and individuals who enjoy sharing their opinions and observations with the world, and some of them have even managed to create a steady business via such channels. In order not to make to big of a digression, only some of these channels will be mentioned: Nando v Movies, Lessons from the Screenplay, CinemaWins, The Take, Wisecrack, Mr Sunday Movies, Browntable, Just Write, CineFix, CinemaSins, Jeremy Jahns, Chris Stuckmann, and many others. Most of these creators have compiled a collaborative piece of work entitled *One Marvelous Scene*.[4] This is a playlist that, at the time of writing of this paper, contains as many as 186 different video essays, each of which specifically analyses an individual scene from a Marvel movie, talking about „something else" that makes that scene special.

5. CONCLUSION

The MCU, as a global company, is subject to various global influences, from digitalisation, new methods of content processing, new ways of adapting and processing topics, new imperatives in meeting the demands of the audience to unexpected crises such as the current pandemic. Since they have numerous film achievements behind them, they check the pulse of the audience on a large sample and find success in a balance between appealing to the audience and introducing new, sometimes surprising content and techniques. Although some of the innovative methods prove to be inadequate and evoke heated reactions of the audience, the entire film machinery still successfully moves forward because the audience appreciates even

[4] https://www.youtube.com/playlist?list=PLd7v7nQLQGwKQxfPtUPz6i1h3-JVxBx0D

more if their demanding horizon of expectations is exceeded, which happens often with this company, making the risk worthwhile in the end. The survey showed that the Croatian audience, when it comes to their views and attitudes, is absolutely part of the global film audience, which knows Marvel's movie opus very well, but also which changes its preferences at the speed at which the latest technical achievements change.

LITERATURE:

1. *How The Internet Changed The Way We Watch Movies* (last accessed on 8 July 2021)
2. IMDb (last accessed on 13 July 2021)
3. Jauss, H. R. 1978. Estetika recepcije, Izbor studija. Beograd. Nolit.
4. Kubincanek, E. 2020. *The Evolution of Watching Movies at Home*. (last accessed on 8 July 2021)
5. McDuling, J. 2014. *The Glorious Year Before the Internet Ransacked Hollywood.* (last accessed on 8 July 2021)
6. Tkalec, G. 2010. *Primjenjivost teorije recepcije na medij interneta.* FLUMINENSIA, časopis za filološka istraživanja, Vol. 22 No. 2. (last accessed on 6 July 2021)
7. Tkalec, G.; Rosanda Žigo, I. 2017. *Film Reception by Means of New Media or How The Film Escaped from the Cinema.* European journal of interdisciplinary studies (2062-3795) 9 (2017), 2; 105-111 (last accessed on 4 July 2021)
8. Torlak, N. 2013. *Novi mediji – nova pravila i nova recepcija kulture i umjetnosti.* In medias res, časopis filozofije medija, Vol. 2 No. 3. (last accessed on 6 July 2021)

IMPLEMENTATION OF EU RENEWABLE ENERGY POLICY - CASE STUDY OF THE KINGDOM OF SWEDEN AND THE CZECH REPUBLIC

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ABSTRACT
The contribution analyzes the European Union legislation on renewable energy and its implementation in the Czech Republic and Sweden. The level of achieving the policy goals to make EU member states energy production more sustainable, is studied through comparison of promotion instruments used in two Member states. Both have met the 2020 national targets, however with much different share of renewable energy sources of the total energy consumption. In the conclusion lessons from member states from Implementation of the Renewable Energy Directive, are summarized.
Keywords: *the Czech Republic, Emissions, EU Policies, Policy Implementation, Renewable Energy, Sustainable Development*

1. INTRODUCTION

Fossil fuels have a limited supply, which means we cannot rely on them for an unlimited time seeing the unlimited demand with the increase in population. The byproduct of fossil fuels is the greenhouse gas emissions namely the CO2 emission, with a deadly impact on the Earth, with its effect on climate change. “Greenhouse gas emissions are gases that trap heat within the earth's atmosphere by absorbing energy and preventing heat from escaping into space. There are various types of gases, including carbon dioxide, methane, nitrous oxide, and fluorinated gases that each impact climate change at varying levels – known as global warming potential. The effect of each gas depends on the concentration of the gas in the air, length of time the gas remains in the atmosphere, and the strength of its effects on the atmosphere" (Wang, 2020). Ultimately there is a need for a sustainable approach, and renewable energy is what has passed the litmus to be an alternative energy source, seeing the merits attributable. Renewable energy is energy that is obtained from sources that can replenish themselves over time (Owusu & Asumadu-Sarkodie, 2016). The main advantage of renewable energy is its unlimited supply as compared to fossil fuels. The production of renewable energy can be obtained from varied sources such as wind, solar, hydro, tidal, geothermal, and biomass. The usage of renewable energy is also significant to the lowering of fossil fuels imported into the EU, which in turn makes its energy usage sustainable. The EU is committed to drastically reducing dangerous greenhouse gas emissions. To avoid a catastrophic climate change, the EU has committed to lower its greenhouse gas emissions by at least 40% below 1990 levels by 2030 under the Paris Agreement and to set out a way forward towards carbon neutrality by 2050. In the fall of 2018, the European Commission set out a working schedule to word towards carbon neutrality that will help reduce the emissions and fight climate change by 2050. (European Commission, 2018) This research was conducted to investigate the alternative use of renewable energy as a sustainable energy resource. In doing so, the renewable energy policy by the EU was analyzed comparing the Czech Republic to the Kingdom of Sweden. The above countries are both in the EU have a target set in the renewable energy policy to be met and have been selected given

their various infrastructure and progress made or pitfalls encountered in implementing the renewable energy legislation. The Kingdom of Sweden currently tops the EU member states as the country with the highest renewable energy usage, with 54% of its energy sources being renewable. The Czech Republic fell below the EU average of 16.4% and stands at 13.6% as of 2018. This vast disparity was of interest to the researchers. Furthermore, the implementation methods of the EU policy were of the utmost interest to the researchers as well, because of the specificities of environmental protection policy. "Tools to manage the environment are very different from those used for agriculture, for example. The environment is diificlut to legislate for because it is harder to influence outcomes. Because of the size of the problem, the environment involves many more organizations and participants. There are contrasting local, national, and supranational dimensions to environmental problems." (John, 2012)

2. METHODS

The contribution aims to analyze the European Union legislation on renewable energy and to reveal its implementation in the Czech Republic and the Kingdom of Sweden. The level of achieving the policy goals – i.e. to lower EU dependence on imported fossil fuels, make its energy production more sustainable, and create a stable legal environment for businesses – is to be studied through comparison of promotion instruments used in two Member states that have met the 2020 national targets, however with much different share of renewable energy sources of the total energy consumption. The research seeks to provide answers to research questions as to what the goals and main features of the EU policy on Renewable Energy are, how does Sweden and the Czech Republic implement the EU Renewable Energy Legislation, what the strengths and weaknesses of both countries' Renewable Energy practices are and how can lessons from these countries thus contribute to a Sustainable Development future.

3. EU ENVIRONMENTAL POLICY

The European Union has undoubtedly been noted for holding one of the highest standards for environmental protection. (European Union, 2021) This principle holds dear to the commitment of combating if not reducing the barest minimum concerning water pollution, air pollution and waste management. (Ambec, S et al, 2014). The general principle has always been the polluter pays for the consequence of the pollution. These policies are immersed in other international policies and agreements, particularly the UN Sustainable Development Goals. The importance of EU's Environmental Policies can not be over-emphasized because it gives member states a roadmap for what is allowed and what can be managed. The legal basis for this policy can be found in Articles 11, 191 to 193 of the Treaty on the Functioning of the European Union (TFEU). The articles mainly represent the agreed upon stipulations bound by the treaty. The main articles regarding environmental protection will be reviewed for the purpose of our study. Article 11 of the TFEU requires that environmental protection be integrated into the implementation of the union's policies and activities for sustainable development. Article 191 of the TFEU stipulates policies on the environment shall be with the following objectives:

- Preserving, protecting and improving the quality of the environement.
- Protecting human health.
- Prudent and rational utilization of natural resources.
- Promoting measures at the international level to deal with regional and worldwide environmental problems and in partcular combacting climate change.

The EU adopted the following emission reduction targets:

- to reduce greenhouse gas emissions by 20% by 2020 compared to 1990
- to reduce greenhouse gas emissions at least by 40% by 2030 compared to 1990

In the longer term, the EU plans to shift to low-emission economy to reduce greenhouse gas emissions by at least 80–95% by 2050 compared to 1990. The environmental policy also takes into consideration the protection of the diverse plants, animals and other living organism within the member states. Preventive principle should be the aim of the member states are destruction should be contained and resolved at the source. The polluter pays principle must be adhered to at all times. In preparing for the union policy on the environement, the European union shall consider:

- Available scientific and technical data.
- Environmental conditions in the various states of the union.
- The potential cost and benefits of the lack of action or action.
- The economic and social development of the union as a whole and balanced development of the regions.

The union shall corperate with member states, third countries and international organizations within their areas of competence. The arrangements will be a subject of agreement between the union and third countries or internatinal organizations.

3.1. Enviromental policy principles

The environmental policy principles are based on precaution, prevention, and rectifying pollution at source, as well as the polluter pays principle. This means that the first commandment of the policy is to take precautionary measures to first prevent pollution from happening, and if that should fail, rectifying the issue at source to stop the spread of the pollutants. If all else fails, the responsibility of cleaning up the mess falls on the polluter to pay for the damages caused. (Ambec, S et al, 2014). The precautionary is a risk alert tool where is scientific uncertainty about suspected pollutants to human health, risking animal life or threatening plants and other living organisms. These are non-discriminatory measures and are reviewed with the availability of new scientific studies.

3.2. EU Legislation on Renewable Energy

The EU renewable energy legislation was primarily brought about concerning:

1) To increase the energy used from renewable sources.
2) To create energy-efficient sources to reduce greenhouse gases.
3) To reduce the dependence on imported foreign fuels.
4) To improve local renewable energy production to reduce energy loss in transit and emissions.

The discussion and need for an alternative fuel is not one of a recent subject, however with the ever changing climate owing to global warming and the adverse consequences, it was necessary for the Commission to role out a directive. The Directive specifies what is required of each member state and the period for them to transition these into national laws and reporting system that serves as a follow up. Each country irrespective of the success in renewable energy production and usage was supposed to still make it a point to adjust upwardly. The Renewable energy directive (2009/28/EC) established a common framework for the promotion of energy from renewable sources. It sets mandatory national targets for the overall share of energy from renewable sources in gross final consumption of energy and for the share of energy from renewable sources in transport. It lays down rules relating to statistical transfers between Member States, joint projects between Member States and with third countries, guarantees of origin, administrative procedures, information and training, and access to the electricity grid for energy from renewable sources. The EU's original Renewable energy directive (2009/28/EC) set an overall binding target of 20% final energy consumption from renewable

sources by 2020. For EU countries to achieve this, a commitment to reaching their own national renewables targets for 2020 ranging from 10% in Malta to 49% in Sweden. All EU countries have adopted national renewable energy action plans showing what actions are foreseen to meet their 2020 renewables targets. These plans include sectorial targets for electricity, heating and cooling, and transport; planned policy measures; the different mix of renewables technologies they expect to employ; and the planned use of cooperation mechanisms. Every Member State is to adopt a national renewable energy action plan. The national renewable energy action plans shall set out Member States' national targets for the share of energy from renewable sources consumed in transport, electricity and heating and cooling in 2020, taking into account the effects of other policy measures relating to energy efficiency on final consumption of energy, and adequate measures to be taken to achieve those national overall targets, including cooperation between local, regional and national authorities, planned statistical transfers or joint projects, national policies. Apart from the national targets required by the Commission, the member states have the liberty to achieve the set objectives by varying means. For instance, two or more member states may may cooperate on several projects to produce electricity, heating or cooling for renewable energy sources. Private operators are allowed to share in such projects. The proportion of energy produced from such collaboration is supposed to be reported to the Commission. One or more member states may enter into joint coperations with third countries for the production of renewable energy. This kind of production may also invole private operators. Electricity produced in a third country shall only be taken into account where: the electricity is consumed in the member state for which it is produced. Another requirement is that the electricity is produced by a new instalation that came to function after 25th June 2009 or was refurbished by the increase capacity of installation after 25th June 2009. Finally, the energy produced in the third country should not be receiving support from a support scheme in the thrid country other than investment aid granted to the installation.

4. IMPLEMENATAION OF THE RENEWABLE ENERGY POLICY

4.1. Comparison of the Czech and Sweedesh Renewable Energy Policy Implementation

The "most different" systems design, also known as MDSD was used for selecting the compared cases of study. Both selected countries are members of the EU and have similar population sizes of just about ten million inhabitants. Now following the requirements of MDSD for subjects being maximally different, the Czech Republic and Kingdom of Sweden have a lot of differences. The most important difference is the emissions level. According to the current OECD data, the Czech Republic has CO2 emissions of 9.5 tonnes per capita, while that of Sweden is 3.6 tonnes per capita. The Czech Republic has 3 times more CO2 emissions than Sweden, the differences above are the subject of interest to the researcher and compliments the choice of MDSD. The directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources is a framework for the Union's binding target of 32% renewable energy in gross energy consumption by 2030. The Directive is to ensure that member states take on their obligation to meeting the 2020 targets to set the trajectory for the future. The Czech Republic has multiple energy sources with coal being the most used, that has now been largely contested due to the CO2 release and the harm they leave. Renewable energy is a more recent energy source that seeks to be a sustainable option. According to Eurostat, renewable energy usage as of 2009 was just 5% of the various sources of energy and 6% of the overall electricity. In that same year, 40% of energy consumption came from coal, and petroleum accounted for 21%, gas accounted for 15% and 16% from nuclear energy. The most electricity produced was with coal at 55%. In the Czech Republic the primary sources outlined were hydropower, wind, solar and biomass. The overall EU target for the share of renewable energy sources (hereinafter referred to as "RES") to total energy consumption for the 2030 target, is set for 32%, towards the 2020 targets,

respective member states are to set their national targets in line with the Directive 2009/28/EC. The Czech Republic, in alignment with the National Action Plan, set its RES target for 2020 at 13% and has achieved 14.89%. There is still more to go in making the Czech Republic achieve the RES targets on the 2030 RES agenda for the EU. The following proposals have been put across in supporting and approaching the achievement of RES targets. On 13th of January 2020, the Government of the Czech Republic approved the National Energy and Climate Plan which provides comprehensive insight into the progress of the Czech Republic. The plan is based on Article 3 of the EU regulation 2018/1999 on the Governance of the Energy Union and Climate Action, which entered into force on 24 December 2018. It contains objectives and key policies in all five dimensions of the Energy Union. The Czech Republic is one of the least dependent European countries to import fuels due to the vast quantities of coal. The potential for renewable energy has yet to be tapped into mainly because of the abundance of coal. Aside from coal, nuclear energy has been the second source of energy in the Czech Republic, and this leaves renewable energy to be in the third area of energy focus or production. The country's national instrument for laying down policies for the promotion of the use of renewable energy is Act No. 180/2005 Sb., on the Promotion of Use of Renewable Sources, as amended. However, with the respective RES targets for 2020 and 2030, there is the opportunity for the Czech Republic not only significantly put RES as part of the energy mix but prioritize on it owing to the many advantages on the climate level. The existing RES does have great potential and may be expanded significantly towards expanding the infrastructure and consequently being less reliant on coal.

4.2. Implementation of Carbon decrease legislation in the Czech Republic

The Czech Republic adopted its Climate Protection Policy as Government resolution No. 207 of 22nd March 2017. The main objective of the Policy is to determine an appropriate mix of cost-effective policies and measures in key sectors that will lead to achieving the greenhouse gas reduction targets. The primary targets are in line with the EU enviromnematl policy to

- reduce national emissions by 2020 by at least 32 Mt CO2-eq in comparison with 2005
- reduce national emissions by 2030 by at least 44 Mt CO2-eq in comparison with 2005.

It follows up on the State Environmental Policy of the Czech Republic 2012–2020. The current policy thus builds on the steps that were taken in the previous period and which are used for the comparison in this contribtion as only the period terminated in 2020 may be successfully compared. The taken steps are as follows:

- Carbon sequestration: The prolonged storage of carbon dioxide and other forms of carbon to defend the planet against global warming is a measure that has passed the implementation procedures of reducing CO2 in the Czech Republic. Government Decree No. 48/2017 Sb. facilitates mandatory compliance with the standards on goods and agriculture. It has laid down specific requirements for the agriculture sector to comply with in order to access government grants for their business. Paying support to farmers is now conditional on meeting the requirements to foster the sequestration of carbon as a measure to reduce the impact of CO2 emissions in the Czech Republic. One particular tool for expanding forest areas is increasing local support for afforestation under agriculture land provided under the Rural Development Program, enshrined in Government Decree No. 185/2015 Sb.
- Waste Management Sector: The main objective of the waste management sector is reducing the amount of waste which consequently reducing the processing of waste. Thus, processing waster reduces the number of greenhouse gases produced. The Czech Republic's legal waste regulation plan can be found in Act No 185/2001 Sb.; the Act is in line with Directive 2008/98/EC of the European Parliament and Council. The obligation of the Act ensures that waste packaging and recycling are observed at the highest levels, thus sorting out waste in

the right labelling will lead to effective and efficient recycling reducing the need to process large volumes of waste unsorted, reducing emissions in the process.

- Household Sector: Greening the heating source in households is one of the best ways to cut down on conventional energy usage from coal. Where possible, biomass boilers and heat pumps must replace the mainstream heating source cutting down on the use of energy. The New Green Savings Program in the Czech Republic supports the transition from older building heating measures to greener sources of heating in and in the process limiting emissions. The grants from the NGS are purposed to replace environmentally damaging solid fuel boilers with low modern emission boilers. Efficient and cleaner hearting in buildings is supported by the Boiler Replacement Scheme from the Operational Programme Environment 2014 – 2020.
- Industry Sector: Prevention and control of pollution through an integrated approach may be realized ithrough the Act No 76/2002 Sb. The main aim is to reduce CO2 emissions by controlling ozone-depleting substance from the offset of gases from production sites. The entrepreneurs are obliged to prepare energy audits or to implement a system of energy management according to ISO 50001.

4.3. Implementation of Carbon Decrease in the Kingdom of Sweden Legislation

The target for Sweden for the RED 2020 renewable energy usage was 49%. That target has been achieved and exceeded standing now at 54.5%. Many factors are contributing to the achievement. First, the Kingdom of Sweden has an abundance of moving water that ensured the hydropower generation was a key element in energy production. Also, as has been elaborated above, the policy tools adopted by Sweden was one that ensured more rapid change and diversity in the scale of usage. The national policies have consistently rewarded the Swedes from individual homes to businesses and industriesSweden is gearing towards to zero net emissions by 2045 in line with the Paris Agreement for the curbing of CO2 emissions. The Swedish Parliament has passed a Climate Act to strengthen their commitment to controlling and preventing the release of greenhouse gases. Swedish ambitious aim is not just to land at zero emissions but eventually move to negative carbon emissions. Thus, greenhouse gas emissions are less than the amount of carbon absorbed by nature. The new Climate Policy Act is part of the framework which contains goals and plans for business and society to transition into a long-term reduction in emissions. Sweden's emissions targets started as far as 1988 when the Parliament adopted their first climate policy aimed to stabilize CO2 emissions at current levels. The climate policy of Sweden has evolved into the current 2017 framework to have net-zero emissions by 2045. Implementation measures are as follows with regards to the emission reduction strategy:

- Carbon Dioxide Tax: A tax levied on CO2 content in fossil fuel was introduced in Sweden since 1991 that aims at reducing emissions of CO2. The tax has been increased since its introduction consistently from SEK 0.25/kg carbon dioxide (1991) to SEK 1.15/kg (2018). A yearly index of the tax level is applied the CO2 emissions proportionately based on fossil fuel carbon content. Sustainable biofuels are not subject to the carbon tax; this means an increased usage leading to an overall low level of emissions. The carbon dioxide tax has been the primary tool for reducing emission in Sweden and implemented in the following sectors of the economy: heat production, electricity production, industrial sector and agriculture sector.
- Local Climate Investment program: Sweden introduced a Climate Leap in 2015 for local investors to access grants based on an estimated greenhouse gas reduction of each investment. All kinds of organization are eligible to apply for this grant, which has a budget of SEK 1.5 million as of 2018.

- Environmental Code and Planning Legislation: The Swedish Government, in an attempt to minimize pollution, introduced an environmental code in January 1999. The code requires a permit to be obtained for significantly hazardous activities to take place in the environment. Part of the requirement is assessing the CO2 emissions and ensuring compliance with the limits thereof or risk facing a fine.
- Climate Change Communication: The communication aims to make available essential communication to mitigate the climate challenge provide people with the tools necessary for making changes in their ways. Sweden's attempt to become the world's fossil-free state requires the mobilization of entire societies, municipalities and businesses. The government launched a fossil-free Sweden initiative that brings out a dialogue between keys actors and the government agencies to provide partnership programs and resources needed to reduce emissions actively.
- Emission Reduction Obligation: The obligation falls on fuel suppliers and large consumers to ensure the blend of biofuels to reduce the amount of CO2 emissions. The emissions obligation is part of the Fuel Change Reform schemed passed on 1 July 2018 in Sweden. The fuel change makes an essential contribution in reducing fossil fuel used for transport. The indicative target of emissions reduction by 40% by 2030, has a significant significance towards this obligation which introduces 50% of biofuels usage.
- Electrical Vehicle Premium: In 2018, the Swedish government increased possibilities of commuting and transportation with electric bicycles and scooters at a premium for long distances. This measure aims to make people less dependent on cars and thus reduce emissions.
- Charge at home-grant: An allocation of SEK 90 million has been made annually between 2018-2020 by the government to support installations as charging points for cars. Private individuals receive a rebate of 50% for either purchasing or installing these charging points in their homes. The aim of this measure is making it cheaper for households to transition to more sustainable modes of transportation.
- Extended producer responsibility: A legislation enforcing producers to be more responsible for the afterlife of their products is underway to make significant reduction in the level of waste. The challenge that this measure seeks to meet is reducing the amount of waste to be processed by ensuring adequate sorting, collection and recycling of products.

5. CONCLUSION

EU renewable energy policy and its implementation in the Czech Republic and Sweden is studied in this contribution. The EU's liberal approach to the member states in enforcing the strategies is helpful to bring about innovation and create momentum for member states already achieving targets with their working strategies and tools. Both member states are employing diverse energy saving mechanisms to ensure the achievement. Whereas Sweden is rolling out on its charge at home grants to encourage a switch from fossil fuel to electric cars, the Czech Republic is ensuring building heating systems have individual heat adjusted for specific parts of the building, rather than heating the whole building, saving energy in the process. Another recent innovation has been insulation, which requires thicker walls with heat absorption capacity to warm buildings from their storage. Both member states have their larger shares of investment from the government grants, with some amount of support from local investors who benefit from tax exemption mostly. Tax exemption enables investors to have security in their first few years by saving on taxes and expanding the capacity to generate more energy. Both countries set national targets as well as regional targets for achieving set goals. Every region has different needs and inputs for energy generation. The spotlight for emission was however on the capital and industrial regions due to their emissions and energy usage. Finally, harnessing energy from newer building designs is very much in force.

Building permits in both countries require for a clear plan of energy consumption and modern installations of heating systems that have capacity to save more energy. The Czech Republic may compensate its lack of renewable sources to increase substantial production of nuclear energy. However, this type of fuel is not acknowledged by the EU as a renewable source. Thus, nuclear anergy forms a pontential for further research in the field of European energy policy and its further improvements.

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LITERATURE:

1. Abbasi, T., & Abbasi, S. A. (2010). Biomass energy and the environmental impacts associated with its production and utilization. Renewable and sustainable energy reviews, 14(3), 919-937.
2. Ambec, S., & Ehlers, L. (2014). Regulation via the Polluter-pays Principle. The Economic Journal, 126(593), 884-906.
3. Berry, E., Homewood, M. J., & Bogusz, B. (2019). Complete EU law: text, cases, and materials. Oxford University Press, USA.
4. Biesbroek, G. R., Swart, R. J., Carter, T. R., Cowan, C., Henrichs, T., Mela, H., ... & Rey, D. (2010). Europe adapts to climate change: comparing national adaptation strategies. Global environmental change, 20(3), 440-450.
5. Climate Protection Policy of the Czech Republic. (2017) Adopted as Government resolution No. 207 of 22nd March 2017. Available at: https://www.mzp.cz/C125750E003B698B/en/climate_protection_policy/$FILE/OEOK_CPPES_20180105.pdf
6. Craig, P., & De Búrca, G. (2011). EU law: text, cases, and materials. Oxford University Press.
7. Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.
8. Dittmar, M. (2012). Nuclear Energy: Status and future limitations. Energy, 37(1), 35-40.
9. EC European Commission. (2013). GREEN PAPER-a 2030 framework for climate and energy policies. COM (2013), 169.
10. European Union. (2021). Environment | European Union. [online] Available at: https://europa.eu/european-union/topics/environment_en [Accessed 18 Oct. 2021].
11. John, P. (2012) Analyzing Public Policy. Second edition. Routledge. New York. p. 182.
12. Lenaerts, K. (2017). The principle of subsidiarity and the environment in the European Union: keeping the balance of federalism. In European Environmental Law (pp. 129-178). Routledge.
13. Lonza, L., Deix, S., Maas, H., Caiado Amaral, C., Hamje, H., & Reid, A. (2016). EU renewable energy targets in 2020: 2015 Legislative update. Publications Office of the European Union.
14. Mayumi, K., & Polimeni, J. M. (2012). Uranium reserve, nuclear fuel cycle delusion, CO2 emissions from the sea, and electricity supply: Reflections after the fuel meltdown of the Fukushima Nuclear Power Units. Ecological Economics, 73, 1-6.
15. Owusu, P. A., & Asumadu-Sarkodie, S. (2016). A review of renewable energy sources, sustainability issues and climate change mitigation. Cogent Engineering, 3(1), 1167990.
16. Quaschning, V. (2016). Understanding renewable energy systems. Routledge.
17. Solangi, K. H., Islam, M. R., Saidur, R., Rahim, N. A., & Fayaz, H. (2011). A review on global solar energy policy. Renewable and sustainable energy reviews, 15(4), 2149-2163.

18. State Environmental Policy of the Czech Republic 2012–2020. Available at: http://extwprlegs1.fao.org/docs/pdf/cze202072e.pdf
19. Wang, T. (2020). Topic: Global greenhouse gas emissions. [online] www.statista.com. Available at: https://www.statista.com/topics/5770/global-greenhouse-gas-emissions/

EUROPEAN REGIONAL INNOVATION SYSTEMS: SPATIAL CLUSTER ANALYSIS

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ABSTRACT

The paper examines the role of spatial interactions in the context of regional innovation activities across 220 NUTS (Nomenclature of Units for Territorial Statistics) 2 European regions surveyed in 2011 and 2019. The hypothesis that the regional innovation activities affect the innovation processes in neighbouring regions is verified based on the selected ESDA (Exploratory Spatial Data Analysis) instruments. Main variable under the consideration is RII – Regional Innovation Index. In order to perform a multivariate analysis of spatial association we also consider the components of the RII which are grouped into four main types – Framework conditions, Investments, Innovation activities, and Impacts. Univariate spatial analysis suggested that there are significant spatial clusters as for RII index for both observed years (2011 and 2019). Considering a multivariate context, we detect significant differences. Spatial regional interconnections and spillover effects might be in effect in relation with framework conditions of regional innovation systems and innovation activities. On the other hand, given the investments and impacts, the interconnection and spatial dependence of the regions seems to be less effective (significantly lower numbers of positive clusters).

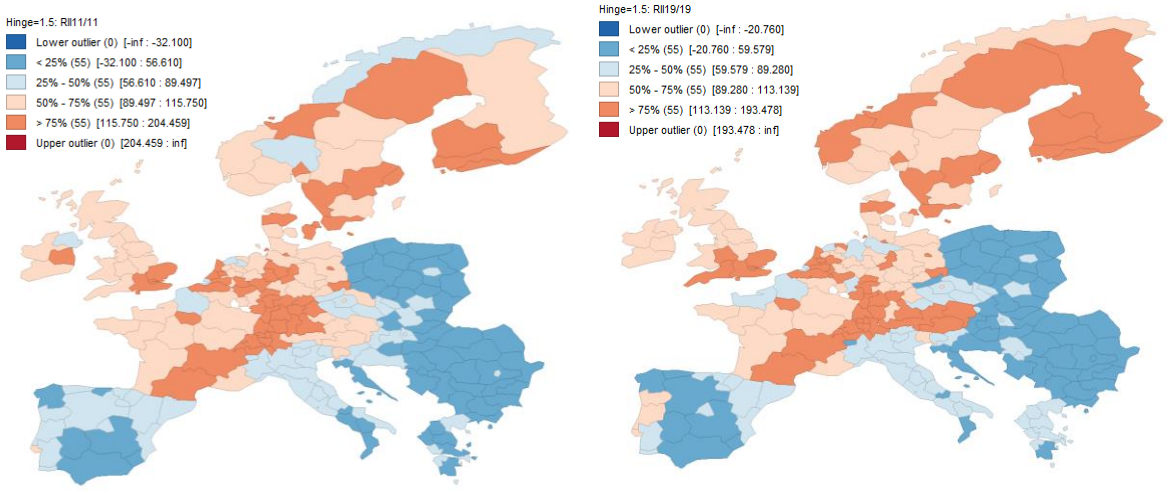
Keywords: *Local univariate and multivariate Geary statistics, NUTS 2 regions, regional innovation system, spatial autocorrelation*

1. INTRODUCTION

Regional competitiveness and development are closely linked to technological change and innovation. These two phenomena derive from knowledge, capacities and skills related to production. Nowadays, regional innovation system (RIS) seems to be a popular way of explaining a region's development and competitiveness based on innovation activities and processes. Regional innovation system involves all the actors (policy makers, technology suppliers, supply/demand matching units, innovation demand firms) that are related with technology generation, diffusion and use in a specific geographical area. The lack of regional innovation data makes problems with measuring of innovation as well as comparative assessment of RIS. The Regional Innovation Scoreboard (RISC) provides a data source, containing statistical facts on regions' innovation performance. Comparative assessment of the performance of innovation systems at the regional level can be done by means of a composite indicator – the Regional Innovation Index (RII). The RISC 2019 (Hollanders et al., 2019) presents a comparative assessment of the performance of innovation systems across 238 regions of 23 EU[1] Member States, Norway, Serbia, and Switzerland. The RII is based on regional data for 17 indicators (for more details, see Hollanders et al. 2019). These indicators are grouped into four main types – Framework conditions, Investments, Innovation activities, and Impacts. Figure 1 illustrates spatial distribution of the RII across the European regions. In order to point out the main time trend in RII development, two box maps were constructed (RII11 Figure (a) – year 2011 and RII19 Figure (b) – year 2019). Based on the maps shown in Figure 1 it is clear that in 2011 and 2019, the spatial distribution of innovation activities across the European regions is very similar.

[1] Cyprus, Estonia, Latvia, Luxembourg and Malta are included at the country level, as in these countries, NUTS 1 and NUTS 2 levels are identical to the country territory.

Mainly the regions of Switzerland, Germany, Finland, and Sweden, are among the top high performing innovation groups. On the other hand, most Eastern European regions, regions of Spain, the South of Italy and Greece perform low on the RII indicators in both years. The regional innovation systems have become the focus of many academic and research studies as well as policy makers. The literature on innovation as one of the important findings has identified that innovation is not uniformly distributed across regions (see, e.g., Khan, 2012; Charlot et al., 2015; or Guastella and van Oort, 2015) but there is geographical concentration and localisation into clusters of innovative companies or research centres. This localisation enables exploiting technological development, sharing experiences with similar technologies or knowledge.



(a) (b)

Figure 1: Box maps: RII11 (a) and RII19 (b)
(Source: author's elaboration in GeoDa)

Innovation among the European regions tends to be spatially correlated. Therefore, this paper focuses on the role of spatial dependences among the European regions in terms of regional innovation problem. The goal of the paper is to assess the European regional innovation systems based on the RII components. In addition, the main trends in RIS will also be subject of interest. Our main hypothesis is that the innovation activities in particular region affect the behaviour in neighbouring regions, that means there exists spatial spillover effects and spatial clusters. Selected ESDA (Exploratory Spatial Data Analysis) tools will be used to verify this hypothesis The rest of the paper is structured as follows: section 2 provides brief theoretical backgrounds of the study. Data and empirical results are presented and interpreted in section 3. The main concluding remarks contain section 4, and the paper closes with references.

2. RESEARCH METHODS

The main methodological framework upon which our empirical analysis is based will be briefly presented in this section. Selected ESDA (Exploratory Spatial Data Analysis) tools are the basis of our empirical analysis. Tools of ESDA enable an evaluation of spatial association among observations – spatial units (regions, countries, etc.). In general, spatial association called spatial autocorrelation (spatial dependence) refers to the situation where spatial units are non-independent over the space This means that nearby spatial units are associated in some way (for more details, see e.g., Getis, 2010 or Anselin and Rey, 2014). The ESDA includes techniques to describe and visualize spatial distributions; identify atypical locations or spatial outliers; discover patterns of spatial association, clusters, or hot spots.

For the detection of spatial autocorrelation global and local indicators of spatial association such as familiar Moran's I, Getis-Ord G statistics or Geary C statistic can be applied. These statistics are used to test the global spatial autocorrelation of the variable we are interested in, i.e., to test for the presence of general spatial trends in the distribution of an underlying variable over an entire space. On the other hand, local versions of these statistics enable to further analysis of local spatial patterns (form more details see, e.g., Anselin and Rey, 2014). In this paper, a local version of Geary´s C statistic is considered to measure a spatial association. This statistic was recently extended to a multivariate context (see Anselin, 2019a). First, we discuss a local Geary statistic. As in its global counterpart (for more details see Anselin, 2019b), the focus is on squared differences, or, rather dissimilarity than similarity. Small values of the statistic suggest positive spatial autocorrelation (see Getis, 2010), whereas large values suggest negative spatial autocorrelation. The local Geary statistic takes on the following form:

$$G_i = \sum_j w_{ij} \left(x_i - x_j \right)^2 \tag{1}$$

where x_i represents the underlying variable for region *i*, N is the number of regions in the data set and w_{ij} are the elements of spatial weight matrix **W** of dimension $N \times N$ (for more details see, e.g., Getis, 2010; Chocholatá, 2018 or Anselin and Rey, 2014).

Statistical inference can be based on a conditional permutation procedure (implemented in GeoDa software) and is interpreted in the same way as for, e.g., local Moran statistic or Getis Ord statistic. However, the interpretation of significant locations in terms of the type of association is not as straightforward for the local Geary as it is for the local Moran statistic. Closer examination (see formula (1)) reveals that this statistic consists of a weighted sum of the squared distance in attribute space for the geographical neighbours of observation *i*. The attribute similarity is not a cross-product, and thus has no direct correspondence with the slope in a scatter plot (Anselin, 2019a; Anselin, 2019b). Next, we briefly outline an extension of the local Geary statistic to the multivariate local Geary. The multivariate local Geary statistic measures the extent to which the average distance in attribute space between the values at a location and the values at its neighbouring locations are smaller (positive spatial autocorrelation) or larger (negative spatial autocorrelation) than what they would be under spatial randomness. Let us consider two standardized variables, z_1 and z_2. The squared distance d_{ij}^2 in two-dimensional attribute space between the values at observation (region) *i* and its geographic neighbour *j* is (Anselin, 2019b):

$$d_{ij}^2 = \left(z_{1,i} - z_{1,j} \right)^2 + \left(z_{2,i} - z_{2,j} \right)^2 \tag{2}$$

A spatial weighted average of the expression (2) is then:

$$\begin{aligned} \sum_j w_{ij} d_{ij}^2 &= \sum_j w_{ij} \left[\left(z_{1,i} - z_{1,j} \right)^2 + \left(z_{2,i} - z_{2,j} \right)^2 \right] \\ &= \sum_j w_{ij} \left(z_{1,i} - z_{1,j} \right)^2 + \sum_j w_{ij} \left(z_{2,i} - z_{2,j} \right)^2 \\ &= c_{1,i} + c_{2,i} \end{aligned} \tag{3}$$

In general, then, for *k* attributes, a multivariate local Geary statistic for variable *v* can be defined as follows:

$$c_{k,i} = \sum_{v=1}^{k} c_{v,i} \tag{4}$$

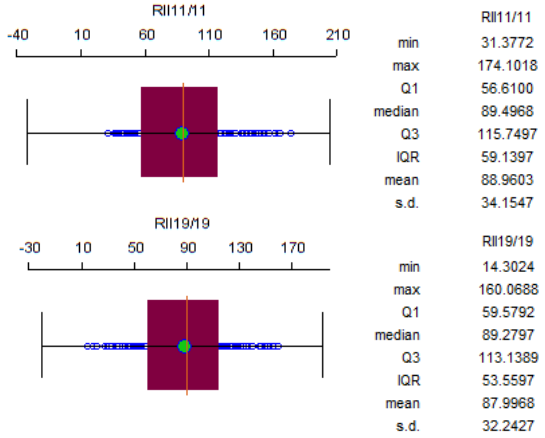
3. EMPIRICAL RESULTS

The regions depicted in Figure 1 forms a basis for our analysis of the European regional innovation problem. The data set comes from the RISC 2019 (Hollanders et al., 2019). The components of RII indicator are used as variables under the consideration. Due to missing data and isolated observations (island regions), the data set reduction was made, and finally we deal with 220 observations at different NUTS (Nomenclature of territorial units for statistics) levels (NUTS 1 and NUTS 2). Both RII indicators (year 2011 and 2019) measure performance in reference year relative to that of the EU (in percentage). The components of the RIIs are normalised, the minmax normalization procedure was used. The maximum normalised score is equal to 1 and the minimum normalised score is equal to 0 (for more details regarding normalising RII data, see Hollanders et al., 2019). Descriptions of the RII components are given in Table 1.

Category	Definition	Abbr.
Framework Conditions:		
Population having completed tertiary education	Percentage population aged 30-34 having completed tertiary education	x_1
Lifelong learning	Percentage population aged 25-64 participating in lifelong learning	x_2
International scientific co-publications	International scientific co-publications per million population	x_3
Top 10% most-cited publications	Scientific publications among the top-10% most cited publications worldwide as percentage of total scientific publications	x_4
Investments:		
R&D expenditure in the public sector	R&D expenditure in the public sector as percentage of regional GDP	x_5
R&D expenditure in the business sector	R&D expenditures in the business sector as percentage of regional GDP.	x_6
Non-R&D innovation expenditure in SMEs	Non-R&D innovation expenditure in SMEs as percentage of turnover	x_7
Innovation Activities		
Small and medium-sized enterprises (SME) with product or process innovations	SMEs introducing product or process innovations as percentage of SMEs	x_8
SMEs with marketing or organisational innovations	SMEs introducing marketing or organisational innovations as percentage of SMEs	x_9
SMEs innovating in-house	SMEs innovating in-house as percentage of SMEs	x_{10}
Innovative SMEs collaborating with others	Innovative SMEs collaborating with others as percentage of SMEs	x_{11}
Public-private co-publications	Public-private co-publications per million population	x_{12}
PCT applications at the European Patent Office (EPO)	PCT applications at the EPO per billion regional GDP.	x_{13}
Trademark applications	Trademark applications per billion regional GDP	x_{14}
Design applications	Design applications per billion regional GDP	x_{15}
Impacts		
Employment in medium-high/high-tech manufacturing and knowledge-intensive services	Employment in medium-high/high tech manufacturing and knowledge-intensive services as percentage of total workforce	x_{16}
Sales of new-to-market and new-to-firm innovations	Sales of new-to-market and new-to-firm innovations in SMEs as percentage of turnover	x_{17}

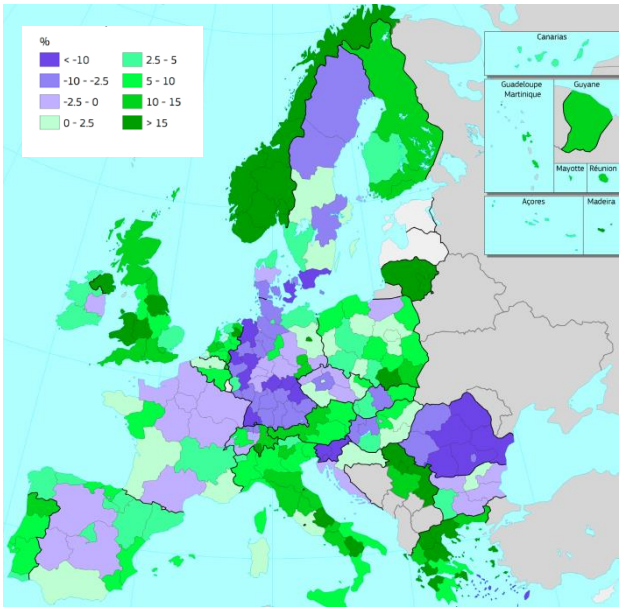
Table 1: Variable descriptions
(Source: author's elaboration)

Figure 2 illustrates the box plots for the RII indicators in 2011 and 2019 (Figure 2(a)) and innovation performance change 2011-2019 (Figure 2(b)). Based on the multiple box plot comparisons we might conclude that overall, from time trend point of view, there are almost no differences between these two observed periods. However, a more detailed analysis following Figure 2(b) shows that performance of regional innovation systems changes over time across the regions. Comparing performance between 2011 (RII2011) and 2019 (RII 2019), 159 regions have improved their performance on regional innovation, and for 79 regions performance has worsened (Hollanders et al., 2019).



	RII11/11
min	31.3772
max	174.1018
Q1	56.6100
median	89.4968
Q3	115.7497
IQR	59.1397
mean	88.9603
s.d.	34.1547

	RII19/19
min	14.3024
max	160.0688
Q1	59.5792
median	89.2797
Q3	113.1389
IQR	53.5597
mean	87.9968
s.d.	32.2427

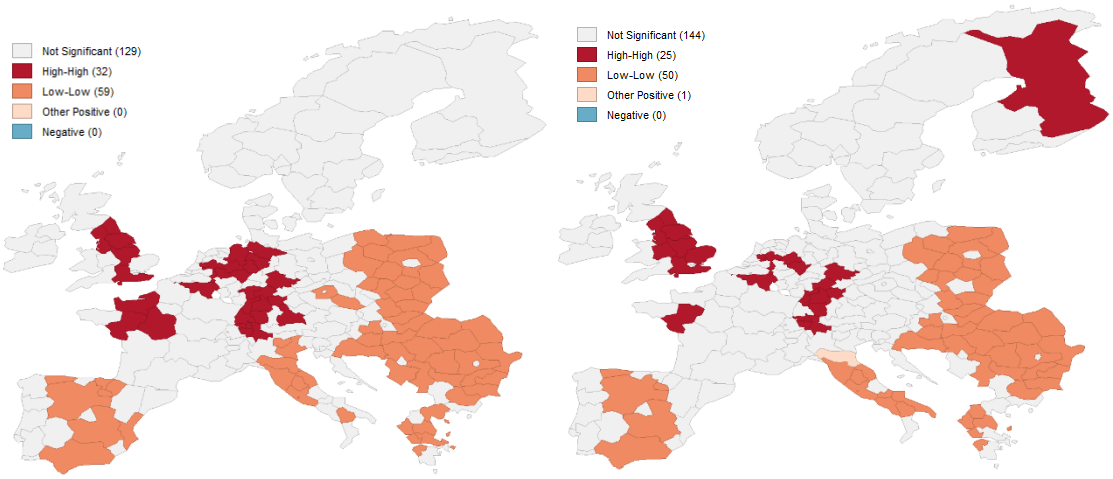


(a) (b)

Figure 2: Multiple boxplots for comparison – RII11 and RII19 (a) and innovation performance change 2011-2019 (b)
Notes: Q1 – Fist quartile; Q3 – Third quartile; IQR – Interquartile range; s.d. – Standard deviation
(Source: author's elaboration in GeoDa and RISC 2019 (Hollanders et al., 2019))

The multiple box plot comparison also suggests disparities among the regions that are clear from the comparison of minimum and maximum values indicating the differences of approximately 140 (year 2011) and 150 (year 2019) percentage points. In addition to regional disparities, we can also notice that regions are considerably clustered (see Figure 1). The existence of strong positive spatial autocorrelation indicates statistically significant value of global Moran's *I* statistic (0.775 for RII2011 and 0.745 for RII2019). It is necessary to note that a spatial weighting matrix of queen contiguity form (for more details see, e.g., LeSage and Pace, 2009) was used in all parts of the empirical analysis.

Figure following on the next page

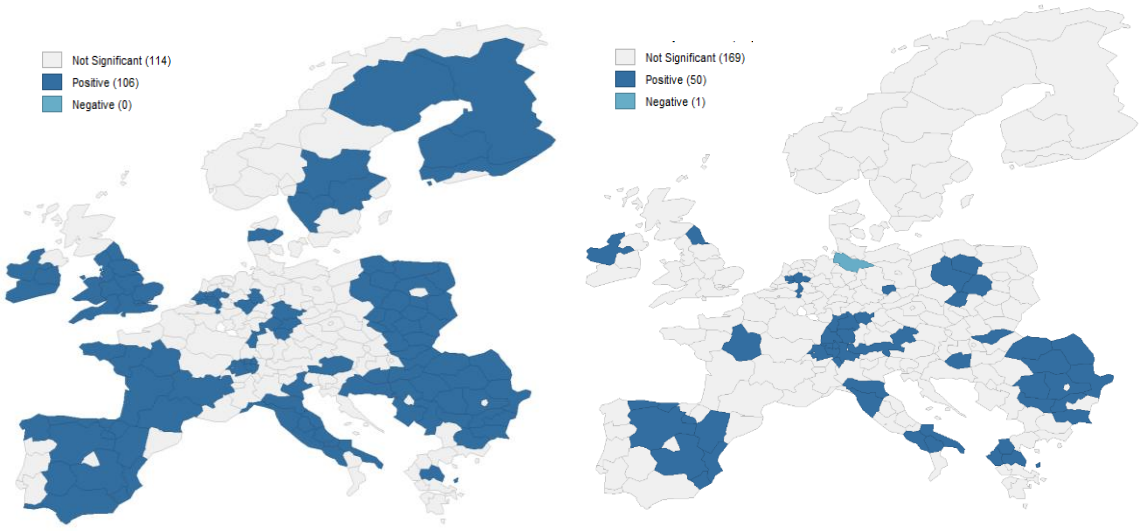


(a) (b)

Figure 3: Local Geary clusters: RII11 (a) and RII19 (b)
(Source: author's elaboration in GeoDa)

Geary cluster maps (constructed based on the local Geary statistic defined by formula (1)) provide more evidence about indicated unequal distribution and spatial clustering of European innovation represented by RII indicators. Based on the Figure 3 we identify significant locations – regions with positive spatial autocorrelation. A significant local Geary statistic that is less than its expected value under the null hypothesis of spatial randomness suggests a clustering of similar values (small differences imply similarity). For those observations, the association high-high or low-low can be detected. Based on the RII11, 32 high-high and 59 low-low local Geary clusters were identified (see Figure 3(a)). Very similar spatial pattern can be seen from Figure 3 (b). In addition, in terms of the number of so-called hot spots and cold spots locations, there is also a significant similarity (25 high-high and 50 low-low for RII19). The high-high locations are mainly regions of Switzerland, Germany, the United Kingdom and France. These regions are regions where high values of RII are clustered. Low-low values of RII are concentrated in regions of Spain, Italy, Greece and most of the Eastern European regions. The high-high clusters are in comparison to low-low clusters more scattered across the map. As the calculation of local Getis statistic is based on the squared difference (see formula (1)), there may be observations for which a classification to high-high or low-low clusters is not possible. This is because the squared difference can cross the mean (expected value). These locations are referred as *other* positive spatial autocorrelation. No *other* positive locations were identified for RII11and only one such observation for RII19. As for negative spatial autocorrelation (large values imply dissimilarity), it is not possible to assess whether the association is between high-low or low-high outliers, since the squaring of the differences removes the sign (Anselin, 2019b). In this analysis, there are no regions with this type of association. Next, we will proceed with multivariate analysis. The local multivariate Geary statistic provides an additional perspective to measuring the tension between attribute similarity and locational similarity. So far, the RII index was the variable under the consideration and previous analysis suggested that there are significant spatial innovation clusters. In order to perform a multivariate analysis of spatial association, we enrich our analysis by other related variables – components of the RII index. We aim at four main characteristics of the innovation system – Framework conditions, Investments, Innovation activities, and Impacts. The implementation of an effective regional innovation policy requires, in addition to direct financial funding of R&D activities, implement other policy instruments that aim at improving the framework conditions of RIS that provide a favourable innovation environment.

For this reason, we aim at groups of indicators that characterize Framework conditions, Investments and Innovation activities separately (see Table 1). Finally, we also look at the impacts of innovation activities on the basis of a set of indicators – Impacts (see Table 1). Even though a location may be identified as a cluster using the univariate local Geary but this does not mean that it is also a multivariate cluster. The univariate statistic deals with distances in attribute space projected into a single dimension, whereas the multivariate statistics are based on distances in a higher dimensional space (see formulas (3) and (4)). This statistic corresponds to a weighted average of the squared distances in multidimensional attribute space between the values observed at a given geographic location *i* and those at its geographic neighbours *j*. In this analysis the group of indicators - Framework conditions contain 4 indicators, group Investments includes 3 indicators, Innovation activities are characterized by 8 indicators, and finally the group Impacts contains 2 indicators. Based on the formula (4) we have identified multivariate local Geary clusters for each group separately. As well as in relation to univariate spatial association statistics, inference was based on a conditional permutation approach. Two cluster maps for groups Framework conditions and Investments are depicted in Figure 4, and two cluster maps for groups Innovation activities and Impacts are depicted in Figure 5. Statistically significant positive clusters were identified for all four groups of indicators but no negative one. However, there are obvious differences in the number of positive clusters between groups. Spatial regional interconnections and spillover effects might be in effect in relation with framework conditions of RIS and innovation activities. On the other hand, given the investments and impacts, the interconnection and spatial dependence of the regions seems to be less effective (significantly lower numbers of positive clusters).



(a) (b)

Figure 4: Multivariate local Geary cluster maps: Framework conditions (a) and Investments (b)

(Source: author's elaboration in GeoDa)

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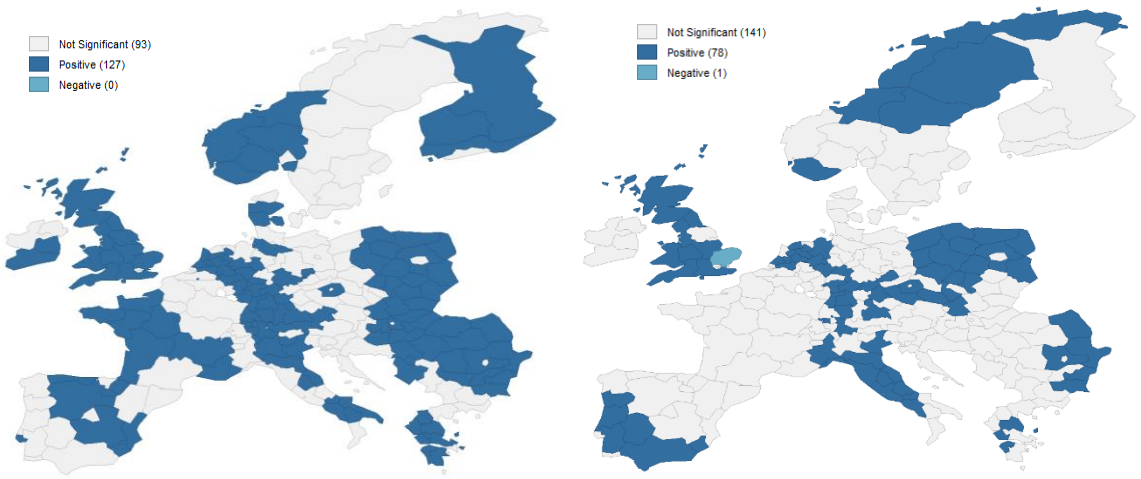

(a) (b)

Figure 5: Multivariate local Geary cluster maps: Innovation activities (a) and Impacts (b) (Source: author's elaboration in GeoDa)

4. CONCLUSION

This paper dealt with spatial cluster analysis of 220 NUTS 2 European regions surveyed in 2011 and 2019. Main variable under the consideration was RII – Regional Innovation Index. In order to perform a multivariate analysis of spatial association we have also considered components of the RII grouped into four main types – Framework conditions, Investments, Innovation activities, and Impacts. Our univariate spatial analysis suggested that there are significant spatial clusters as for RII index for both observed years (2011 and 2019). Also, very similar spatial pattern was observed. The high-high, so-called hot spot locations are mainly regions of Switzerland, Germany, the United Kingdom and France. These regions are regions where high values of RII are clustered. Low-low values of RII, so-called cold spot locations are concentrated in regions of Spain, Italy, Greece and most of the Eastern European regions. Considering a multivariate context, we detected significant differences as for the number of positive clusters between groups. Spatial regional interconnections and spillover effects might be in effect in relation with framework conditions of RIS and innovation activities. On the other hand, given the investments and impacts, the interconnection and spatial dependence of the regions seems to be less effective (significantly lower numbers of positive clusters).

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LITERATURE:

1. Anselin, L. (2019a). A Local Indicator of Multivariate Spatial Association: Extending Geary's c. *Geographical Analysis*, 51(2), pp. 133-150. Retrieved 20.09.2021 from https://doi.org/10.1111/gean.12164.
2. Anselin, L. (2019b). *GeoDa An Introduction to Spatial Data Analysis*. Retrieved 20.09.2021 from https://geodacenter.github.io/workbook/6a_local_auto/lab6a.html#local-geary.
3. Anselin, L., Rey, S.J. (2014). *Modern spatial econometrics in practice: a guide to GeoDa, GeoDaSpace and PySAL*. Chicago, USA: GeoDa Press LLC.

4. Charlot, S, Crescenzi, R., Musoleli, A. (2015). Econometric modelling of the regional knowledge production function in Europe. *Journal of Economic Geography* 15, pp. 1227–1259.
5. Chocholatá, M. (2018). *Spatial Analysis of the Tertiary Educational Attainment in European Union*. Proceedings of the 15th International Conference Efficiency and Responsibility in Education, Praha, pp. 117-124.
6. Getis, A. (2010). Spatial autocorrelation. In: Fischer, M.M., Getis, A. *Handbook of Applied Spatial Analysis. Software Tools, Methods and Applications.* Berlin, Heidelberg: Springer-Verlag, pp. 255-278.
7. Guastella, G., van Oort, F. (2015). Regional Heterogeneity and Interregional Research Spillovers in European Innovation: Modelling and Policy Implications. *Regional Studies*, 49(11), pp. 1-16.
8. Hollanders, H., Es-Sadki, N., Mekelbach, I. (2019). Regional Innovation Scoreboard 2019. Retrieved 20.09.2021 from https://ec.europa.eu/growth/sites/growth/files/ris2019.pdf.
9. Khan, B.Z. (2012). Of Time and Space: A Spatial Analysis of Technological Spillovers among Patents and Unpatented Innovations in the Nineteenth Century. Retrieved 10.03.2017 from http://wwwnberorg/papers/w20732.
10. LeSage, J., Pace, K. (2009). *Introduction to Spatial Econometrics*. Boca Raton: Chapman and Hall/CRC.

THE IMPACT OF MONETARY POLICY ON ECONOMIC INDICATORS: A CASE STUDY OF THE CZECH REPUBLIC

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ABSTRACT

The paper aims to evaluate the impact of monetary policy instruments of the Czech National Bank on the economy in the period 2007 to 2020. The analysis will monitor the dependence between the interest rates of the Czech National Bank (CNB) and the economic indicators (GDP and inflation). The analysis will be performed using time series analysis, specifically the Engle-Granger cointegration test to determine long-term relationships, respectively. Granger causality test (VAR model) to determine short-term relationships between monitored indicators. The first step, using the Akaike criteria, was to determine the optimal delay of the entire time interval for the periods analyzed. Time series that appear to be stationary were excluded on the basis of the results of the Dickey-Fuller test. Further testing was continued with the Engle-Granger test if the conditions were met. It was designed to identify cointegration relationships that would show the correlation between the selected variables. These empirical results did not show long-term relationships between CNB interest rates and GDP or inflation, which means that these rates do not have a long-term effect on GDP or inflation. At the same time, it was found that even GDP with inflation has not been affected by CNB interest rates for a long time. However, the results of the analysis point to short-term relationships between the monitored variables, so there is causality between them. Mutual causal links were found between CNB interest rates and GDP. The same empirical results were achieved between the CNB's interest rates and inflation, and causality was also found between inflation and the CNB's interest rates. Based on these results, it can be stated that the CNB's monetary policy is only successful in the short term in influencing selected economic indicators.

Keywords: *GDP, Inflation, Interest rates, Monetary policy*

1. INTRODUCTION

In times of crisis, central banks have to adapt their monetary policy to the current situation. It is necessary to ease monetary conditions, to try to increase the amount of money in the economy. The same approach cannot be applied during crises or in the immediate aftermath as in times of economic boom. In times of crisis, when the economy is in recession, central banks tend to lower interest rates in order to ease monetary conditions. When this strategy fails and interest rates are at 'technical zero', central banks resort to unconventional monetary policy tools. The CNB's main objective is to maintain price stability. It also looks after financial stability and the safe functioning of the financial system in the Czech Republic.

Insofar as its main objective is not affected, the CNB supports the government's general economic policies leading to sustainable economic growth and the general economic policies in the European Union with a view to contributing to the achievement of the objectives of the European Union, acting in accordance with the principle of an open market economy. The CNB has been achieving its main objective since January 1998 through the inflation targeting system. The CNB is thus committed to aiming to keep inflation around the announced target under normal external economic conditions (CNB, 2020a). From January 2006 until December 2009, the inflation target was 3 %. From January 2010 until the eventual adoption of the euro, the inflation target is 2 % with a tolerance band of +/- 1 %. The tolerance band captures the uncertainty associated with deviations of actual inflation from the inflation target due to unpredictable shocks. The CNB's key rate is considered to be the 2T repo rate, which bears interest on the excess liquidity commercial banks deposit with the CNB. Other interest rates set by the CNB are the discount rate and the lombard rate. Changes in these substantial monetary policy instruments have an impact on other variables, and hence on economic indicators, through the various channels of the transmission mechanism. The successful development of economy is based on the efficient and stable performance of commercial banks (Gavurová et al., 2017). Changes in rates do not, however, have an immediate impact on the economy; in practice, their impact is only felt after a lag of 12-18 months. The CNB has to take this time lag into account even in times of crisis, when its rapid response to changing conditions is important, but the economic effects cannot be seen immediately. Central banks around the world had to react to situations related to the COVID-19 pandemic in 2020. The CNB was no exception. Already during the first wave of the COVID-19 pandemic, in March 2020, it began to adopt stabilisation policies aimed at reducing the impact of the situation caused by the coronavirus pandemic on Czech households, entrepreneurs and companies. The monetary policy measure was an interest rate cut, which was implemented in three steps. The key two-week repo rate was thus lowered to 0.25 %, the Lombard rate was set at 1.00 % and the discount rate at 0.05 %. The aim of this paper is to evaluate the impact of monetary policy instruments of the Czech National Bank on the economy in the period 2007 to 2020. The analysis will monitor the dependence between the interest rates of the Czech National Bank and the economic indicators (GDP and inflation).

2. THEORETICAL BACKGROUND

A variety of authors have in the past examined the effects of monetary policy in times of crisis. One of them is Tran (2018), who examined the effectiveness of the monetary policy transmission mechanism channels in containing inflation in Vietnam from 2001 to 2015. The author concludes that there is a significant short-term relationship between credit growth and inflation, as well as between central bank interest rates. Other authors who have examined similar issues are for instance Gulzar et al. (2019), who looked at long-term relationships and the impact of the spread of the global financial crisis on emerging Asian financial markets. The results indicated a long-term cointegration between the US market and emerging markets. The impact of U.S. quantitative easing on developing and advanced economies was examined by Chen et al. (2015). Its impact on developing countries is varied, but higher compared to the impact on advanced economies. US monetary policy contributed to the overheating of the economies of Brazil, China and other countries in 2010 and 2011, but supported their recovery in 2009 and 2012. These heterogeneous effects highlight the unevenly distributed benefits of the cross-border spillovers of monetary policy. The study by Obeid and Awad (2017) aimed to analyze the effect of monetary policy instruments on the performance of the Jordanian economy during 2008-2011. The research was conducted using quarterly data from 2005-2015 and the VECM model.

The results showed positive short-term and long-term effects of monetary policy instruments on real GDP growth, as well as an inverse relationship between the discount rate and economic growth in Jordan. Rising interest rates in the economy discourages both consumers and firms from borrowing money, which is more expensive, and at the same time leads economic agents to deposit money in banks, which translates into lower economic activity, or the amount of money spent on the purchase of goods and services and on investment. Therefore, there is a decrease of aggregate demand and thus lower economic growth. The empirical results also do not support what we should expect on the basis of conventional economic theory. Khatkhate (1988) analyses the relationship between 64 LDCs over the period 1971-1980 using selected macroeconomic variables and the level of real interest rate using the non-parametric Mann-Whitney test. He finds that the real interest rate itself has little or no impact on the selected macroeconomic variables. Saracoglu and Lanyi (1983), King and Levin (1993) find a positive relationship between the level of interest rate and real GDP. In contrast, Wu and Xia (2016) find opposite results. According to Piketty (1997), short-term interest rates can have long-term effects on GDP via wealth distribution and lending. Černohorský (2021) has an interesting approach, which examines the relationship of liquid money measured as the Money of Zero Maturity aggregate to selected monetary aggregates in the USA. These include, in addition to the standard development of the CPI, the prices of bonds, shares and real estate. There is a restriction that, in addition to the relationship between Money of Zero Maturity and shares, there are two-way short-term relationships between the variables under study. Based on a literature review, the interest rates set by the Czech National Bank (two-week repo rate, discount rate and Lombard rate) were selected as independent variables and GDP with inflation as dependent variables. In the statistical analysis, the impact of monetary policy (interest rates) on selected economic indicators during the crisis will be evaluated using time series analysis, specifically the Engle-Granger cointegration test and the Granger causality.

3. DATA AND METHODOLOGY

3.1. Data

The aim of the paper is to evaluate the impact of the Czech National Bank's monetary policy instruments on the economy during the crisis using time series analysis, specifically the Engle-Granger cointegration test or the Granger causality test (VAR model). The impact of the CNB interest rates (two-week repo rate, discount rate and Lombard rate) on GDP and inflation in the Czech Republic in 2007-2020 will be examined. The ARAD time series system (CNB, 2020b) was the source of quarterly data on interest rates (exogenous variables) and gross domestic product (endogenous variable). Inflation, as the second endogenous variable, was obtained from the Czech Statistical Office (Czech Statistical Office, 2020). Table 1 presents all the variables that are present in the analysis.

Table 1: Description of the variables used for analysis

Variable abbreviation	Description of variable
GDPCR	Real Gross domestic product in the Czech Republic
INF	Inflation in the Czech Republic
DIS	Discount rate
LOM	Lombard rate
REPO	2W repo rate

(Source: Author's own work)

In order to obtain a logarithmically normal distribution of the time series, the data were logarithmically normalised at the beginning of the analysis.

3.2. Time series analysis

To analyze the time series, we must first determine the optimal order of the delay. We determine the optimal lag order by using the Akaike Information Criterion (Akaike, 1981). We always look for the minimum value of the information criterion, which we then use in the following procedure. For all the above exogenous and endogenous variables for CR, we have conducted tests with no constant and no trend, with constant and trend. We tested the optimal lag order for the Hannan-Quinn information criterion at 6 lag orders, which corresponds to a lag of six quarters, which is consistent with economic theory (see, e.g., Mankiw, 2014, for more details). It is also the upper limit of the monetary policy time lag stated by most central banks. We further exploit the findings in the framework of the ADF test and the Engle-Granger cointegration test. All tests were conducted at the 0.05 significance level. The stationarity of the selected data is tested using the Augmented Dickey-Fuller test (ADF test). In testing the hypotheses in the ADF test, the following formula is used (Dickey and Fuller, 1979):

$$\Delta X_t = (\phi_{,} - 1)X_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta X_{t-1} + e_t$$

where X_t is the dependent variable, p is the lag e_t residual component. This formula examines whether the variable contains a unit root. The hypotheses of the ADF test are stated as follows:

- H_0: time series are non-stationary
- H_1: time series are stationary.

If the selected time series are non-stationary, the time series can be adjusted using first difference (or other orders of difference). Another important model is the EC model (ECM), which is related to the modelling of so-called cointegration. As Cipra (2013) states, in most cases, if we linearly combine non-stationary univariate time series, the resulting time series will also be non-stationary. However, economic and financial time series can often be combined in such a way that the resulting series is already stationary. Thus, although the individual time series are non-stationary, their joint movement over time tends in the long run to an equilibrium state. Such a case is referred to as cointegration. If the time series {xt} and {yt} can be considered cointegrated in the long run, this relationship can be written by the following model (Cipra, 2013):

$$\Delta y_t = \gamma \, . \, \Delta x_t + \alpha \, . \, (y_{t-1} - \beta \, . \, x_{t-1}) + \varepsilon_t$$

Where:

- the parameter β describes the long-term cointegration relationships between the variables
- the parameter γ describes the short-term relationships between the variables
- the parameter α determines the rate of adjustment to the equilibrium state
- ε_t the residual component.

Cipra (2013) states that an important part of multivariate time series analysis is also testing for causality. The general concept of causality is related to prediction: if one time series causally affects another time series, then it should help to improve the predictions for that second time series. In practice, the investigation of causality is usually restricted to VAR models, where it takes a pictorial and easily computable form. Causality according to Granger means that there is a correlation between the current value of one variable and past values of other variables. Short-term relationships between time series can be established using Granger causality, where a causal relationship exists between variables.

That is, one of the variables may help improve the predictions of the other or vice versa, or the causal relationships may be reciprocal. The hypotheses for this test can be defined as follows:

- H_0: there is no causal relationship between the variables
- H_1: there is a causal relationship between the variables.

To evaluate the result of the test, the *p*-value is compared with the significance level α. If this *p*-value is higher than the significance level, the null hypothesis cannot be rejected and it can therefore be assumed that changes in the independent variable do not explain changes in the dependent variable. Otherwise, there would be an assumption that the independent variable helps to improve the predictions of the dependent variable because there is a causal relationship between them.

4. DISCUSSION OF THE RESULTS

4.1. Testing the Stationarity of the Time Series

Table 2 shows that none of the selected time series were stationary, thus H0 was not rejected at the 0.05 significance level in any of the cases as all p-values were higher than the selected significance level. It was therefore necessary to use first difference to stationarize the time series (Table 3).

Table 2: The results of the ADF test for a unit root

Time series	*p*-value	H_0	Evaluation of ADF test results
l_GDPCR	1	Not refused	Time series non-stationary
l_INF	0,9517	Not refused	Time series non-stationary
l_DIS	0,1305	Not refused	Time series non-stationary
l_LOM	0,4628	Not refused	Time series non-stationary
l_REPO	0,4515	Not refused	Time series non-stationary
l_DIS	0,948	Not refused	Time series non-stationary
l_LOM	0,8516	Not refused	Time series non-stationary
l_REPO	0,8274	Not refused	Time series non-stationary

(Source: Author's own work)

Table 3: The results of the ADF test – first difference

Time series	*p*-value	H_0	Evaluation of ADF test results
d_l_GDPCR	0,0001619	Refused	Time series stationary
d_l_INF	0,0010820	Refused	Time series stationary
d_l_DIS	0,0000193	Refused	Time series stationary
d_l_LOM	0,0000171	Refused	Time series stationary
d_l_REPO	0,0000136	Refused	Time series stationary
d_l_DIS	0,0000018	Refused	Time series stationary
d_l_LOM	0,0001	Refused	Time series stationary
d_l_REPO	0,0001	Refused	Time series stationary

(Source: Author's own work)

After conducting the ADF test for the differenced variables, it was found that for all time series the null hypothesis can now be rejected, thus the differenced time series are considered stationary. It is therefore possible to proceed to the next step of the analysis, which is the Engle-Granger test.

4.2. Determining the Time Series' Interdependence Using the Engle-Granger Cointegration Test

The variables HDPCR and INF were always considered endogenous (dependent) in relation to the variables DIS, LOM and REPO. Subsequently, a further test was performed in the opposite direction, where these variables were in turn inserted as exogenous (independent). The table includes the identification of the relationships that were tested, the lag order that was tested for each relationship, the resulting *p*-value, an indication of the rejection or nonrejection of the null hypothesis as well as the time series (whether they are cointegrated or not).

Table 4: The results of the Engle-Granger Cointegration Test

Time series	*p*-value	H_0	Evaluation of EG test results
l_DIS/l_GDPCR	0,0568	Not refused	No cointegration
l_GDPCR/l_DIS	0,0568	Not refused	No cointegration
l_LOM/l_GDPCR	0,8025	Not refused	No cointegration
l_GDPCR/l_LOM	0,8025	Not refused	No cointegration
l_REPO/l_GDPCR	0,7064	Not refused	No cointegration
l_GDPCR/l_REPO	0,7064	Not refused	No cointegration
l_DIS/l_INF	0,6371	Not refused	No cointegration
l_INF/l_DIS	0,6371	Not refused	No cointegration
l_LOM/l_INF	0,6864	Not refused	No cointegration
l_INF/l_LOM	0,6864	Not refused	No cointegration
l_REPO/l_INF	0,9333	Not refused	No cointegration
l_INF/l_REPO	0,9333	Not refused	No cointegration

(Source: Author's own work)

Table 4 shows that cointegration was not demonstrated in any of the cases, as all p-values are higher than the α significance level (0.05). Thus, the analysis did not reveal any long-term relationships between the variables. Cointegration was not demonstrated for any of the selected time series, therefore, based on the analysis, it can be concluded that there are no long-term relationships between them. Therefore, interest rates set by the CNB do not have a long-term effect on GDP or inflation.

4.3. Granger Causality

The Granger causality test was performed for all pairs of variables with the maximum lag order (6). From a list of possible tests with no constant, with constant and with constant and trend, the one that came out as the most appropriate for each pair was selected in the first step when the optimal lag order was tested. Testing was again performed in both directions (Table and, Table 6). For each lag order, there is always a *p*-value and an indication of the rejection or nonrejection of the null hypothesis, i.e. the assumption or rejection of a causal relationship.

Table following on the next page

Table 5: The results of the Granger causality test for interest rates and GDP the Czech Republic

Order of lag	*l_DIS/l_GDPCR*			*l_GDPCR/l_DIS*		
	p-value		H_0	*p*-value		H_0
1	**0,000000000986**	*******	**Refused**	**0,0000002690**	*******	**Refused**
2	0,2404		Not refused	0,8469		Not refused
3	0,925		Not refused	0,9536		Not refused
4	0,7826		Not refused	0,9805		Not refused
5	0,5317		Not refused	0,6273		Not refused
6	0,2345		Not refused	0,7589		Not refused
Order of lag	*l_LOM/l_GDPCR*			*l_GDPCR/l_LOM*		
	p-value		H_0	*p*-value		H_0
1	**0,00000000740**	*******	**Refused**	**0,0000000055**	*******	**Refused**
2	0,2187		Not refused	0,7623		Not refused
3	0,982		Not refused	0,674		Not refused
4	0,6906		Not refused	0,9819		Not refused
5	0,453		Not refused	0,982		Not refused
6	0,1836		Not refused	0,8658		Not refused
Order of lag	*l_REPO/l_GDPCR*			*l_GDPCR/l_REPO*		
	p-value		H_0	*p*-value		H_0
1	**0,0000000799**	*******	**Refused**	**0,0000000084**	*******	**Refused**
2	0,2264		Not refused	0,8275		Not refused
3	0,9935		Not refused	0,6453		Not refused
4	0,688		Not refused	0,8963		Not refused
5	0,448		Not refused	0,9141		Not refused
6	0,1757		Not refused	0,8016		Not refused

*Note: Significant coefficient at the respective significance level marked with an asterisk is 0.01 (***), 0.05 (**) and 0.1 (*). In terms of results, we are interested in p-values below 0.05 (i.e. ** and ******).*

(Source: Author's own work)

Table following on the next page

Table 6: The results of the Granger causality test for interest rates and inflation the Czech Republic

Order of lag	*l_DIS/l_INF*			*l_INF/l_DIS*		
	p-value		H_0	*p*-value		H_0
1	**0,000000108**	*******	**Refused**	**0,000000793**	*******	**Refused**
2	0,4554		Not refused	0,8345		Not refused
3	0,4432		Not refused	0,9571		Not refused
4	**0,0000879**	*******	**Refused**	0,7005		Not refused
5	**0,0004**	*******	**Refused**	0,6262		Not refused
6	0,1885		Not refused	0,8936		Not refused
Order of lag	*l_LOM/l_INF*			*l_INF/l_LOM*		
	p-value		H_0	*p*-value		H_0
1	**0,000000118**	*******	**Refused**	**0,00000385**	*******	**Refused**
2	0,4524		Not refused	0,8019		Not refused
3	0,4665		Not refused	0,788		Not refused
4	**0,0000665**	*******	**Refused**	0,9677		Not refused
5	**0,0004**	*******	**Refused**	0,9561		Not refused
6	0,1396		Not refused	0,945		Not refused
Order of lag	*l_REPO/l_INF*			*l_INF/l_REPO*		
	p-value		H_0	*p*-value		H_0
1	**0,000000739**	*******	**Refused**	**0,0000000725**	*******	**Refused**
2	0,4238		Not refused	0,8875		Not refused
3	0,4611		Not refused	0,7786		Not refused
4	**0,0000671**	*******	**Refused**	0,8417		Not refused
5	**0,0003**	*******	**Refused**	0,8791		Not refused
6	0,1295		Not refused	0,8868		Not refused

*Note: Significant coefficient at the respective significance level marked with an asterisk is 0.01 (***), 0.05 (**) and 0.1 (*). In terms of results, we are interested in p-values below 0.05 (i.e. ** and ******).*

(Source: Author's own work)

4.4. Research Results

The statistical analysis examined the relationship between the interest rates of the Czech central bank and two selected economic indicators (GDP and inflation) over a period covering two major crises (the 2007-2009 financial crisis and the current crisis caused by the spread of COVID-19). No cointegration has been demonstrated for any of the selected time series, therefore, based on the analysis performed, it can be concluded that there are no long-term relationships between them. Thus, interest rates set by the CNB do not have a long-term effect on GDP or inflation. The results of the analysis, however, point to short-term relationships between the variables, thus the so-called causality was present. First-order causal relationships were found between CNB interest rates and GDP. However, these interest rates have a Granger effect on inflation not only in the first lag order, but also in the fourth and fifth lag orders, so it is possible to use these variables to improve the prediction of inflation in all these lag orders. On the other hand, inflation only causally affects the CNB interest rate within the first lag order. The authors of the studies listed in Section 2 have examined the impact of various instruments and have reached mixed conclusions on the effect of monetary policy on economic indicators. The cointegration of the selected monetary policy instruments and economic indicators has been confirmed, for example, by Tran et al. (2018) and Bruggeman et al. (2005).

Tran et al. (2018) however, also pointed to the existence of short-term relationships between the selected variables. These short-term relationships were also found in the analysis conducted for the impact of the Czech National Bank's interest rates on gross domestic product and inflation.

5. CONCLUSION

On the basis of the analysis, no long-term relationships were found between CNB interest rates and GDP or inflation, which means that these rates do not have a long-term effect on GDP or inflation, but at the same time neither GDP nor inflation are affected by CNB interest rates in the long run. However, based on the results of the Granger causality tests, it can be concluded that there are short-term relationships between each pair of variables. The 2T repo rate, the discount rate and the Lombard rate all affect GDP in a Granger sense, so they can be used to improve the GDP forecast with a time lag of one quarter, and the relationship here also holds in reverse. These rates can also be used to improve forecasts of inflation, with time lags of one, four and five quarters (the standard time lag of the impact of a change in interest rates on inflation is about one year, sometimes more). Inflation, in the Granger sense, affects interest rates only with a time lag of one quarter, so it can be used to improve forecasts of interest rates at the appropriate lag order. Based on these results, it can be concluded that the CNB's monetary policy is successful in influencing selected economic indicators only in the short term. According to the Monetary Policy Report, which was approved by the CNB Board on 11 February 2021, interest rates set in this way should remain stable until around mid-2021 and then gradually rise (CNB, 2021). A significant risk of this forecast lies in the possibility of a slower fading of the pandemic than assumed in the forecast. If the closures in the Czech Republic and abroad last longer, this will lead to a deterioration in the financial situation and sentiment of firms and households. Such a situation could cause a longer-lasting cyclical slowdown in the Czech economy.

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LITERATURE:

1. Akaike, H. (1981). Likelihood of a model and information criteria. *Journal of Econometrics*. (p. 3-14). Netherlands: Elsevier BV, North-Holland.
2. Arlt, J., Arltová, M. (2007). *Ekonomické časové řady: [vlastnosti, metody modelování, příklady a aplikace].* Praha: Grada.
3. Bruggeman, A., Camba-Mendéz, G., Fischer, B., Sousa, J. (2005). *Structural Filters for Monetary Analysis: The Inflationary Movements of Money in the Euro Area*. Retrieved 20-05-2021 from https://ssrn.com/abstract=691882
4. Chen, Q., Filardo, A., He, D., Zhu, F. (2015). *Financial Crisis, US Unconventional Monetary Policy and International Spillovers*. IMF Working Papers, 15(85).
5. Cipra. T. (2013). *Finanční ekonometrie. Praha: Ekopress.*
6. Czech National Bank. (2020a). *Monetary policy of the Czech National Bank*. Retrieved 21-03-2020 from https://www.cnb.cz/en/about_cnb/mp-factsheet-en/.
7. Czech National Bank. (2020b). *Time series database – ARAD.* Retrieved 20-05-2020 from https://www.cnb.cz/cnb/STAT.ARADY_PKG.STROM_KOREN?p_lang=EN
8. Czech National Bank. (2021). *Monetary Policy Report – Winter 2021*. Retrieved 12-09-2021 from https://www.cnb.cz/en/monetary-policy/monetary-policy-reports/Monetary-Policy-Report-Winter-2021/

9. Czech Statistical Office (2020). *Key macroeconomic indicators.* Retrieved 20-05-2020 from https://www.czso.cz/csu/czso/hmu_ts
10. Černohorský, J. (2021). The relationship of liquid money and selected price indices in the USA. *International Journal of Monetary Economics and Finance* (p. 69-90). Geneva: Inderscience Enterprises Limited Order Dept
11. Dickey, D. A., Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association* (p. 427-431). London: Taylor & Francis.
12. Gavurova, B., Belas, J., Kocisova, K, Kliestik, T. (2017). Comparison of selected methods for performance evaluation of Czech and Slovak commercial banks. *Journal of Business Economics and Management* (p. 852-876). London: Taylor & Francis.
13. Gulzar, S., Mubajtabka Kavani, G., Xiaofeng, H., Avub, U., Rafique, A. (2019). Financial cointegration and spillover effect of global financial crisis: a study of emerging Asian financial markets. *Economic Research-Ekonomska Istraživanja* (p. 187–218). London: Taylor & Francis.
14. Khatkhate, D. R. (1988). Assessing the impact of interest rates in less developed countries. *World Development* (p. 577-588).
15. King,, R. G., Levine, R. (1993). Finance and growth: Schumpeter might be right. *The quarterly journal of economics* (p. 717-737). Oxford: Oxford Academic.
16. Mankiw, G. (2014). *Principles of macroeconomics*. Stamford: Cengage Learning.
17. Obeid, R., Award, B. (2017). Effectiveness of Monetary Policy Instruments on Economic Growth in Jordan Using Vector Error Correction Model. *International Journal of Economics and Finance* (194-206). Ontario: The Canadian Center of Science and Education.
18. Piketty, T. (1997). The dynamics of the wealth distribution and the interest rate with credit rationing. *The Review of Economic Studies* (p. 173-189). Oxford: Oxford Academic.
19. Saracoglu, R., Lanyi, A. (1983). The importance of interest rates in developing economies. *Finance and Development*. Retrieved 10-10-2017 from https://search.proquest.com/ docview/197931302?accountid=17239
20. Tran, N. (2018). The long-run analysis of monetary policy transmission channels on inflation: a VECM approach. *Journal of the Asia Pacific Economy* (p. 17–30). London: Taylor & Francis.
21. Wu, J. C., Xia, F. D. (2016). Measuring the macroeconomic impact of monetary policy at the zero lower bound. *Journal of Money, Credit and Banking* (p. 253-291). Ohio: The Ohio State University.

OUTSOURCING STILL LIVES

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ABSTRACT

Research on the business model of export-oriented companies in New Europe has shown that the outsourcing model is still dominant and that a large number of companies. Lot of them are operating on this model for more than 25 years, and they are still maintaining full independence regarding proprietorship even do they are coordinating business strategy with the outsourced and make decisions along with the outsourced. Most of the academic researchers are dealing with outsourcing models through direct investment and relationship evolution, while the model by which two fully independent companies collaborate is less often the subject of academic research. Qualitative research complements existing economic theories and determines how the model of cooperation has evolved over time, how comparative advantages have changed, how the relationship between companies and the intensity of integration has changed, and all the positive and negative impacts on cooperation in time frame of 25 years (1996-2021). This research is compilation of more researches conducted separately for different purposes, but they are all linked through one author what makes them compatible. First researches are conducted in 2010. after Financial crises and harsh decline in European economy, second in 2013. after Croatian EU accession what brought major administrative changes, within 2015-2017 in order to test development of business model and in 2020-2021. during COVID Pandemic which is still continuing. Research compares theoretical outsourcing models with a real case study and complements existing theoretical models. It also covers three major events that affected the local and global economy, the financial crisis of 2008, the enlargement of the European Union in 2013 and COVID Pandemic in 2020. and positive impacts of such model on overcoming the consequences of crises. Information and communication technology (ICT) methods were used for data collection and processing.

Keywords: *business model of export-oriented companies, outsourcing model, Information and communication technology (ICT)*

1. INTRODUCTION

The subject of the research is offshore outsourcing, a model according to which the buyer and the seller are located in different countries [33], or more precisely, about outsourcing to New Europe where the business is transferred to a contractual partner who is a completely independent company [23]. New Europe is defined as European countries that had a socialist social order [23]. The Outsourcing model began to be applied intensively after the beginning of the transition, ie in the early 1990s. Given that this is a model that evolves and changes over time [7], which inevitably changes the relationships between partners, in a theoretical context it shows how the model has evolved and how these relationships have changed. The second part of the paper deals with defining the research method and sampling. Given that this is cooperation between companies operating in completely different relationships, which is emphasized as the reason for the difficulty of maintaining the level of trust between partners [37], and that despite this cooperation has been maintained for over 25 years, still works,

another goal of this paper is to explore how trust has developed among partners. The aim is to investigate whether outsourcing as a model has developed empirically.

2. TEORETICAL CONTEXT

Outsourcing in less developed economies has enabled accelerated development to facilitate access to technology and access to foreign markets, but the biggest benefit of such a model has been the application of organizational and managerial knowledge - this paper provides an overview of how this relationship has developed over the years. Outsourcing is known as a business model, practically always, and examples of outsourcing can be found as far back as ancient Rome, where tax collection, one of the fundamental functions of the state [16]. Although it has always existed, outsourcing only became the subject of academic research in the early 1990s, after it became a common and dominant business model. Initially, lower-paid jobs were outsourced and jobs that could not guarantee employment for a full eight hours, such as protection and maintenance of facilities [1] [27]. In other words, in the beginning, the subject of outsourcing was simple services, necessary for business, but irrelevant for business in terms of value creation. This model of outsourcing is defined as tactical outsourcing [11]. The relationship is shallow and short-term; the only interest is to reduce costs. The main reasons for outsourcing are: fulfillment of orders for which the company does not have the capacity, reduction of operating costs and lack of special knowledge and skills [2]. It is questionable whether such a shallow relationship is externalization or not given that it does not contain elements crucial to externalization, that the relationship is occasional, short-lived, and that the lowest level of trust is required [11]. Trust boils down to trust or the prediction that the other party will act in good faith [30]. Accelerated globalization and the creation of a single global market, and increasing exposure to competition, have forced companies to find a new business model to survive. This forced companies to concentrate on activities in which they could achieve comparative advantages and to transfer other activities to other companies [4]. The reason for finding a new business model was the process of job polarization other, physically easier and / or better paid jobs [12]. The definitions of outsourcing from the mid-1990s differ in breadth and depth from those of the early 1990s. The new approach to the model is defined as reliance on external sources in performing the production function and other value-added processes [19]. The basic motive is no longer to reduce costs but to achieve comparative advantages through the collaboration of several companies with a high level of knowledge and skills, and the model is called strategic outsourcing [28]. Cooperation is long-term and close, so the literature defines participants as outsourced - the party that entrusts the work and the outsourcer, the party that does the work [31] an outsourcer follows [35]. All work is performed according to precise instructions and technical specifications by outsourced [36]. Transferring functions to an outsourcer has also generated a transfer of product knowledge and increased inventiveness since comparative advantages are achieved through collaboration and participants must be compatible and have coordinated business strategies, it is very important to establish collaboration with a reliable partner [31]. From the above, we conclude that a high level of trust is needed. Both parties must be satisfied with the relationship because they represent two sides of the same coin and credibility and mutual trust are emphasized as a source of comparative advantage [5]. Given the set hierarchy in decision-making according to this model on the one hand which puts the outsourced in a better position, and familiarity with all the details of the business process by the outsourcer on the other hand, trust must be deeper and assumes that one party will not use vulnerability of the other party [5]. Changing circumstances, further globalization and the removal of trade barriers have influenced the evolution of outsourcing into a model according to which each company involved in the process has specialized knowledge and skills and makes them available to partners with full confidence.

The closely integrated and strictly defined hierarchy of strategic outsourcing has been replaced by loose relationships between stakeholders [32]. The partners are complementary to each other and act together with the aim of creating a completely new, unknown to the market, innovative product and taking a leading position in the market [25]. Companies are becoming more specialized and more and more processes are being transferred to others, which generates the need for closer cooperation with other companies [29]. Companies are forced to specialize more closely in their core activities and the subject of externalization is becoming increasingly complicated functions, including research and development [15]. This way of cooperation requires the highest possible level of trust, which means 1) that the partners will behave in good faith to meet all previous commitments, 2) adapt to new market situations in a way that the other partner considers fair, 3) will not use the opportunity to exploit positions towards the partner even when possible. Such relationships are based more on informal agreement than on contractual obligations [10]. Trying to become a market leader requires that the participants in the process be flexible and find a model of cooperation that will work because in such a complex model of cooperation it is impossible to specify all the obligations and relationships. Outsourcing begins at the level of cost reduction through a tactical outsourcing model [22]. Separated from a function, after a few years the externalizer becomes deficient in resources associated with that function and becomes dependent on outsiders who have acquired additional knowledge and skills related to that function at the same time [14]. Interdependence puts redefining the relationship with the externalizer to a higher level, because now the externalizer cannot achieve new added value without the externalizer's knowledge and skills, which raises the process of externalization to the level of strategic union, and after a few years to the level of network organization. There are three phases of development that overlap and complement each other, but are essentially very different [7]. These are the big bang era, the bandwagon era and the era of limitless organizations, which corresponds to the chronological development of the model. During the Big Bang era, companies massively outsourced non-core businesses [18] to other businesses whose core business was. The subject of externalization were services such as call centers, cleaning and technical maintenance services, security work and the like. In the Bandwagon era, the company's top managers began to think in a whole new way about their comparative advantages, more precisely, about how to increase them and improve their products. The thinking about the main activity of the company has been changed and the main activity is perceived as one in which the company has greater knowledge and competencies than others, while all activities in which the company lags behind the competition will be given to someone else, to qualitatively equalized all parts of the product and thus made a perfect product. New value has been added through the strategic partnership of several companies, each of which has specific competencies and knowledge in their field [28]. The next stage of evolution is the era of limitless network organizations in which companies connect to create a new, innovative product unique in the market [24]. Since outsourcing is an evolutionary model and is constantly being modified over time [17], the aim of this paper is to determine how the model works in unpredictable and difficult conditions and circumstances.

3. RESEARCH

The surveys were conducted over five years as shown in Table 1.

Table following on the next page

Time Frame	Number of respondents	Number of interviewed	Research driven by:	Question
2008 - 2012	40	24	Positive trends in the footwear industry in Croatia from 2008-2013.	How outsourcing has affected the overcoming of the crisis in Croatia
2013	8	8	Croatia's accession to the EU	How entering into affected interpersonal relationships
2015 - 2017	237	76	Exploring the outsourcing model through the geographical and political dimension	Whether the model has worked the same in other countries and what forms of model are applied in practice
2020 - 2021	78	6	COVID pandemic control measures 19	How the pandemic affected interpersonal relationships

Table 1: Time dimension of research

3.1. First research

The first research was conducted in 2010-2012. A preliminary research interviewed 40 companies in Croatia that together employ over 90% of total employees and the results showed that there are two basic models: Direct investment and foreign outsourcing. Based on this research, a semi-structured survey was conducted using the in-depth interview method of companies - one FDI and one FO. In FDI, all management processes are outsourced and all major decisions are outsourced, so there is no trust factor, while the FO outsourcer makes all decisions alone, taking into account the interests of the outsourced and must correlate them. Trust is very important here, and it is one of the subjects of research for this paper. The subject of the research is a company that was founded in 1991 and from the beginning has been working on the model of outsourcing from the simplest jobs onwards. The aim of the research was to empirically determine how outsourcing affected the overcoming of the global financial crisis in 2008 driven by the fact that the footwear industry showed steady growth from 2008-2013. years. Namely, the bursting of the housing bubble in the US secondary financial market (subprime segment) in 2007, triggered by the interaction of many interdependent factors, such as macroeconomic developments, monetary policy decisions, excessive expectations of new, inventive, financial instruments and misjudgments and decisions of people [26] led to the Great Depression, now known as the Global Financial Crises, the largest crisis since the Great Depression of the 1930s. The total damage suffered by the global economy through the bursting of the internet bubble, the Global Economic Crisis itself and the European sovereign debt crisis (SDC) is estimated at $ 30 trillion, and has caused a major economic downturn [34]. In subcontracting system, mostly every subcontracting company performs one function (eg: production, sales or marketing, etc.) for which is highly spetialised. So when it comes to the problem (in this case crisis), it is much easier to deal with problem in only one function than in the entire business process. In a period of crisis, it is necessary to initiate optimization processes, and mentioned processes are different in each business process, apropos, cost is reduced in different ways. For example, production mostly makes decisions for productivity increase, marketing insists on efficiency increase, while sales need to find new target markets with the same operating costs. Respondents agreed that it is more effective when each subcontracting company has responsibility for only one function and that in subcontracting system they operate more effectively and efficiently than companies that deal with all business functions/processes at once. In subcontracting companies, each company has it own management that deals with only one function for which is highly trained. That is how subcontracting leads to business risk dispersion. In a period of financial crisis, it leads to dispersion of negative effects caused by crisis. Furthermore, each company cover costs of the mentioned process out of own sources, what disperses financial burden as well. Such system gives much more strength to struggle any disorder.

Nor less important is the fact that different governments applied different measures to struggle with the global crisis, and, companies involved in subcontracting systems in several countries, took benefits of each one of them. Respondents agree that subcontracting help them to overcome global financial crisis that started at the year 2008 because they are in charge for only one function for which are highly trained and they do not disperse their concentration on other business functions. Respondents pointed out that the model of tactical outsourcing, in which relations between the parties are very superficial and shallow during the crisis years covered by this research, in the period 2008-2012. mainly grew into a strategic one because the contracting parties helped each other and deepened their mutual relations with the aim of cooperating in the future of the new market conjuncture. All 24 companies interviewed stated that the negative effects of the global economic crisis have hit other sectors much harder, especially the construction and clothing industries, than the footwear industry.

3.2. Second research 2013

The research was conducted on the occasion of Croatia's accession to the EU and was limited to Croatia only. It was conducted using the method of structured in-depth interview with two questions, how did joining the EU affect your business and whether the relationship with the strategic partner has changed. All respondents answered that business is administratively easier because there are no more customs clearance and documentation is much simpler, and that doing business abroad is reduced. Regarding the depth and breadth of relations with partners, all stated that the new administrative position of the Republic of Croatia did not affect it in any way. The research was conducted using a questionnaire method on the entire population and was answered by 92 out of 105 companies. All answers were the same.

3.3. Third research 2015 - 2017

The third research was conducted on a much larger number of respondents and in a much wider geographical area. A survey was also conducted based on the authors 'personal assessment of the interviewees' willingness to provide reliable and accurate data [8]. During this research, conducted on a sample of 59 companies in Hungary, Romania and Slovakia, the same model was detected as in the previous research detected in Croatia. For the purposes of this paper, one company was selected in each of the countries. 10 companies in Germany and 7 companies in Italy were also interviewed as outsourced. The aim of the research was to empirically determine how the outsourcing model has evolved over time [21]. A sample of one company was defined for Germany, Italy, Croatia, Hungary and Romania with the aim of verifying the conducted research and giving depth, and including an additional factor, which is mutual trust. The basis for the research was data collected in another study. Companies that have had the same development path and that have more modified mutual relations with the other party in outsourcing were interviewed to obtain in-depth idiographic data on the degree of trust and models of cooperation [9]. Given the repetition of the model and the collected data, the saturation was achieved with a small sample, ie with one respondent for each country [3] because it is a targeted research [6]. This research was conducted in a cyclical period in which the world economy, according to official data from the World Bank, was constantly growing. It showed that outsourcing significantly accelerated the development and helped to eliminate the lack of surveyed companies [13]. The research results showed the coexistence of all three theoretical outsourcing models. Some respondents have never improved their relationship from tactical to strategic, and few have improved it to a network organization. Respondents also developed a relationship at the same or lower level of affiliation with other companies by improving their relationship with outsourcer.

3.4. Fourth research

Measures to combat the COVID 19 pandemic, a global lock down event, are unprecedented in history and have had very severe consequences for the global economy. By closing the distribution channels, consumption was limited, which made production unnecessary. Since the production function is one of the foundations of the outsourcing model, research was conducted on how such a market situation affected the mutual relations of partners. Four companies were surveyed, two FDIs, for the needs of companies A and B, one FO, company C and one company that works simultaneously on the outsourcing model and with its own brand at the same time, company D. Saturation was achieved because it was done targeted research and that all forms of ownership are covered [6]. Relationships have changed in different ways. Following Corbett's [7] three models of outsourcing tactically, strategically, and, network organization, in companies A and B that are subsidiary company a network organization is detected since all functions except sales and marketing are transferred from the parent company to them. In Company C, strategic outsourcing was detected as it outsourced to retain sales, marketing, design and procurement functions. In company D, tactical outsourcing was detected, considering that in the business segment, according to the outsourcing model, it performs only the production function. Companies A and B used the financial capacity of the parent company to maintain employment and viability. Parent company also did business with other companies according to the model of strategic and tactical outsourcing. By reducing orders, cooperation with first tactical outsourcers was canceled, then with strategic ones, while A and B had an absolute advantage in filling the capacity. The intensity of outsourced connectivity increased during the COVID crisis [20]. Company C, strategic outsourcing, overcame the crisis on its own using its own resources and state aid (sustentions). The intensity of ties weakened slightly due to the fact that all development projects were suspended until the market stabilized again and new functions were not transferred and the outsourcer and outsourced each fought independently. Once the market stabilizes again C intends to continue the transfer of functions and transformation towards Industry 4.0 in collaboration with outsourced. Company D has completely abandoned the outsourcing model and concentrated on its own brand with the strategic goal of just becoming outsourced by the tactical outsourcing model.

4. RESULTS AND DISCUSSION

Due to the different sample size, the values were converted to percentages (Table 2). The regression method will be used to develop the forecasting model.

Time Frame	pozitive	0	negative
2008-12.	100%	-	-
2013.	-	100%	-
2015-17.	74%	26%	-
2020–21	68%	29%	3%

Table 2: Sense of "connection" through time

Shown graphically using a percentage composite bar graph is given in Figure 1.
Positive trends in the industry also affect the "connectivity" until the accession of the Republic of Croatia to the European Union. The expected change due to entry did not happen, so there was no improvement in "connectivity", but stagnation. In 2015, the "connection" begins again, which is slightly weakened, but not significantly disrupted even in 2020, when the crisis caused by Covid-19 occurred.

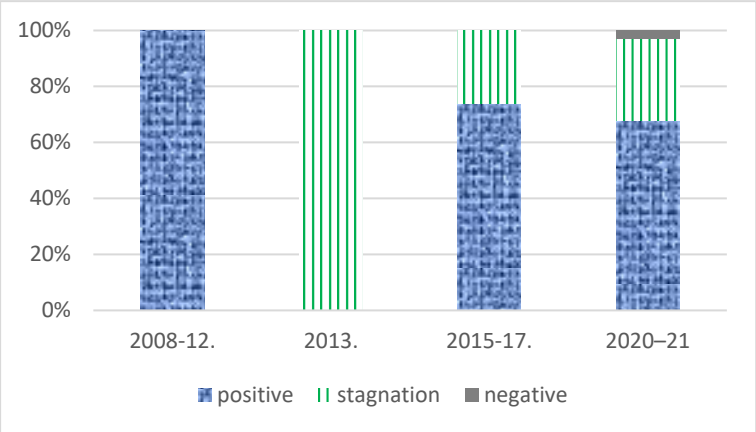

Figure 1: Change in "connectivity" over time

The grouped data divided into classes of 4 years (except for the last period - 3 years) are shown in Table 3.

Time (t/y.)	positive case (%)
2008. – 2012.	100
2013. – 2017.	74
2018. – 2021.	68

Table 3: The grouped data

The Statistica 8.0 was used to examine the decline (growth) of the function (Figure 2).
The function that best describes the change in the variable y depending on the variable x is:

$$y = 1{,}0575 \cdot 10^5 - 2056 \cdot x + 10 \cdot x^2 \qquad (1)$$

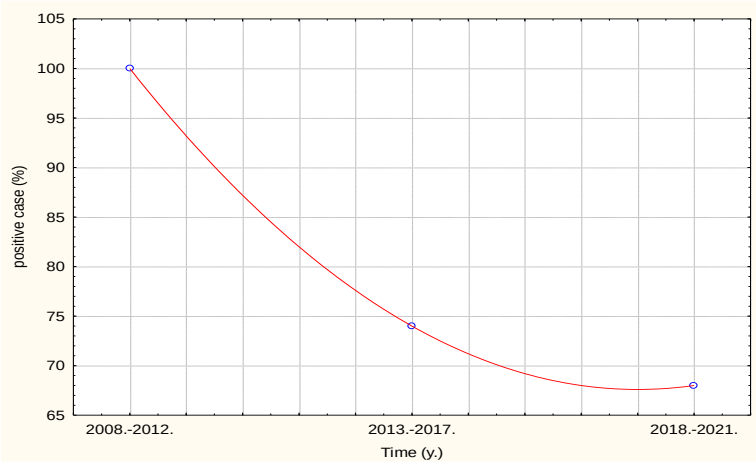

Figure 2: The function of the dependence of "connection" on time

The function of the dependence of the "connection" on time makes it possible to predict the "movement" of the variable y in the future.

5. CONCLUSION

Outsourcing as a model has shown that in crisis conditions companies are more intensively connected with the aim of ensuring long-term stability because in strategic outsourcing, and especially in network organizations, no company can function independently.

Globalization has resulted in the fact that local economic crises no longer exist. The global economy is becoming unified, and local economic crises can only result in political circumstances and instability. National governments fought the global financial crisis separately, each with their own methods, causing non-linear exits from the recession, despite the fact that the crisis was global, especially in the EU, which was the subject of this study. Companies operating in the outsourcing model and located in different countries used positive measures from several countries. The fight against the consequences of the COVID 19 pandemic has been coordinated and EU-wide measures have been coordinated throughout the EU, and actions to recover the European economy have also been coordinated through the Recovery and Resilience Fund. At the time of writing, we are witnessing shortages and inflationary pressures, but also tendencies to shorten supply chains as much as possible and ensure business resilience. At the same time, companies emphasize their comparative advantages and specialize, which favors the further development of the outsourcing model. The proposal for further research is how the new situation in global and regional economies affects the development of the model and in which direction the mutual relations are evolving.

LITERATURE:

1. Abraham, K. McKersie, R. (1990). *New Developments in the Labor Market: Toward a New Institutional Paradigm.* pp. 85–119. Cambridge: MIT Press.
2. Abraham, K. Taylor, S. (1996). *Firms' use of outside contractors: theory and evidence.* Journal of Labor Economics. Vol. 14. pp. 394–424.
3. Atran, S. Medin, D.L. Ross, N.O. (2005). *The cultural mind: Environmental decision making and cultural modeling within and across populations.* Psychological Review. 112(4), pp. 744-776.
4. Barney, J.B. (1995). *Looking inside for competitive advantage*. Academy of Management Executive 9 (4), 49–61.
5. Barney, J.B. Hansen, M.H. (1994). *Trustworthiness as a source of competitive advantage*. Strategic Management Journal 15, 175–190 (Special Issue).
6. Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Thousand Oaks, CA: Sage
7. Corbett, M.F. (2004). *Outsourcing Revolution: Why it Makes Sense and How to Do it Right*. Dearborn Trade Publishing, Chicago
8. Creswell, J.W. (2007). *Qualitative inquiry & research design: Choosing among five approaches (2nd ed.)*. Thousand Oaks, CA: Sage.
9. Crouch, M. McKenzie, H. (2006). *The logic of small samples in interview based qualitative research*. Social Science Information, 45(4), 483-499
10. Dyer, J. Chu, W. (2000). *The Determinants of Trust in Supplier-Automaker Relationships in the U.S., Japan and Korea*. J Int Bus Stud 31, 259–285
11. Embleton, P.R. Wright, P.C. (1998). *A practical guide to successful outsourcing*. Empowerment in Organizations 6 (3), 94–106
12. Goos, M. Manning, A. Salomons, A. (2009). *Job polarization in Europe*. American Economic Review,
13. Gotal Dmitrović, L., Lešina, M., Stojić, M. (2019) Transformation of national economies in boundless world, ESD conference, Baku
14. Gottschalk, P. Solli-Sæther, H. (2006). *Maturity Model for IT Outsourcing Relationship*. Industrial management & Data Systems, 106, 2, 200–212.
15. Howells J. (1999). *Research and technology outsourcing and innovation systems: an exploratory analysis*. Industry and Innovation, 6, str. 111-129
16. Kakabadse A. Kakabadse N. (2002). *Trends in Outsourcing, Contrasting Europe and USA*. European Management Journal, 20, 2, 189–198.

17. Khanna, T. Palepu, K.G., Sinha, J. (2005). *Strategies that fit emerging markets*. Harvard Business Review, 83 (6), 63–76
18. Lacity, M. Hirscheim, R. (1993). *The Information Systems Outsourcing Bandwagon*. Sloan Management Review. 35 (1). 73–85.
19. Lei, D. Hitt, M.A. (1995). *Strategic restructuring and outsourcing: the effects of mergers and acquisitions and LBOs on building firm skills and capabilities*. Journal of Management 21 (5), 835–859
20. Lešina, M. Gotal Dmitrović, L. Selec, H. (2021) *Consequences of covid pandemic on croatian leather and footwear industry*. ESD conference, Rabat
21. Lešina, M. Gotal Dmitrović, L. Stojić, M. (2018) Technology, organisation and strategy as the tool to overcome negative externalities, ESD conference, Zagreb
22. Linder, J.C. (2004). *Transformational outsourcing*. Supply Chain Management Review 8, 54–61.
23. Marin, D. (2004.) *A Nation of Poets and Thinkers – Less So with Eastern Enlargement? Austria and Germany*, Centre for Economic Policy Research, CEPR Discussion Paper No. 3526, London.
24. Martin, R. Sunley, P. (2006). *Deconstructing Clusters: Chaotic Conceptor Policy Panacea?* Journal of Economic Geography, 3, 5–35.
25. Mazzawi, E. (2002). *Transformational outsourcing*. Business Strategy Review 13 (3). 39–43
26. Overbeek, H. (2012). *Sovereign Debt Crisis In Euroland: Root Causes And Implications For European Integration*. The International Spectator 47, 30–48.
27. Prahalad, G. Hamel, C.K. (1990). *The core competence of the corporation*. Harvard Business Review. 168. 79–91.
28. Quinn, J.B. (1999). *Strategic outsourcing: leveraging knowledge capabilities*. Sloan Management Review, 40, 9–21
29. Quintas P. (2003). *Implications of the division of knowledge for innovation in networks.* Networks, Alliances and Partnerships in the Innovation Process, Kluwer Academic Publishers, Dordrecht
30. Ring, P.S. Van de Ven, A.H. (1992). *Structuring cooperative relation- ships between organizations*. Strategic Management Journal, 13, 483-498.
31. Saunders, C. Gebelt, M. (1997). *Achieving success in information systems outsourcing*. California Management Review. Vol. 39 No. 2. 63-77.
32. Schilling, M.A. Steensma, K.H. (2001). *The use of modular organizational forms: and industry-level analysis*. Academy of Management Journal 44 (6), 1149–1168.
33. Simchi-Levi, D. Kaminsky, P. Simchi-Levi, E. (2004). *Managing the Supply Chain*. McGraw-Hill
34. Taskinsoy, J. (2019). *Higher Capital And Liquidity Regulations Of Basel Standards Have Made Banks And Banking Systems Become More Prone To Financial And Economic Crises*. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3401378
35. Venables, A. (1996). *Equilibrium locations of vertically linked industries*. International Economic Review 37. 341-359.
36. Watts, M. Kleiner, B.H. (1995). *When and How To Subcontract*. Management Research News, 18 (3/4/5), pp. 11-15
37. Zaheer, A. Fudge K.D. (2011). *Creating trust in piranha- infested waters: The confluence of buyer, supplier and host country contexts*. Journal of International Business Studies, 42(1), 48–55.

R&D LINKS BETWEEN INDUSTRY 4.0 AND THE CREATIVE INDUSTRIES – A CASE STUDY OF THE SLOVAK REPUBLIC

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ABSTRACT

The fourth industrial revolution is increasing the productivity and efficiency of industry, due to the implementation of new innovative technologies. Moreover, the state-of-the-art technologies of Industry 4.0 have a huge potential to further increase overall industrial production and innovation capacity. For this reason, research and development within the technological domains covered by the Industry 4.0 concept is extensively supported. Research and development are carried out by various actors, including public R&D organizations. Although the Industry 4.0 concept is predominantly perceived from a technological point of view, the successful development of these technological domains is being catalysed by other prospective areas that may contribute to the development of unique technology-oriented solutions. The cultural and creative industries, which are among the most innovative parts of the economy, could also stimulate such a technology-oriented development. The aim of the present article is to identify the R&D links between Industry 4.0 and the cultural and creative industries in the Slovak Republic. Data were obtained through a questionnaire survey and personal in-depth interviews. A core network was identified, comprising 20 teams of public R&D organizations relevant to the various Industry 4.0 technological domains. Data regarding their specific characteristics – mainly, technological focus, and their cooperation with other research institutes operating in the field of cultural and creative industries – were analysed. It was found that as many as 50% of all identified teams cooperate with a highly innovative creative industry. The highest level of cooperation was identified in the field of advanced robotics and design. Cooperation intensity was linked to the technology domain size, represented by the total number of R&D teams, and stimulated by geographic proximity to the potentially available highly innovative partners. All respondents considered the cooperation to be beneficial.

Keywords: *Industry 4.0, cultural and creative industry, R&D, Smart Specialization*

1. INTRODUCTION

The current acceleration of the fourth industrial revolution is boosting the introduction of technological innovation in many countries' economies. Also known as Industry 4.0, the fourth industrial revolution increases overall productivity by replacing human resources with highly efficient technologies. Industry 4.0 is a socio-technical concept whereby technological, social and organizational aspects interact and are interconnected (Beier et al., 2020). Therefore, implementation of the basic principles of Industry 4.0 facilitate multidimensional aspects of the

transformation of companies, as well as entire industries. The Industry 4.0 concept itself is evolving dynamically and includes a number of different technological areas (Chiarello et al., 2018). Overall competitiveness is affected by technological trends such as digitization, cloud computing, IoT and big data (Castelo-Branco, Cruz-Jesus and Oliveira, 2019), as well as robotics, artificial intelligence and cyber security. Due to the rapid development of a wide range of technological domains, there is currently no codified definition of this dynamically evolving concept of industrial development and transformation. The vector of development for Industry 4.0 technological domains is determined by industry needs, and also by knowledge/technology providers' capabilities to reflect market expectations. For this reason, human capital is considered a key factor in the development and implementation of Industry 4.0 in many respects (Cagáňová et al., 2019). In order to provide innovative solutions in the broadly defined areas of Industry 4.0, it is necessary to support creativity. Creativity is seen as a driver of entrepreneurship and innovation by stimulating collaboration and networking (Rodrigues and Franco, 2020). Hence, to stimulate economic development, creativity and an interlinked culture are strongly promoted (Nohara, Okamura and Kawabara, 2016). In this context, the development of cluster cooperation and cluster funding is important driver (Burger, 2017). It is generally acknowledged that companies located in highly creative environments are more innovative (Ucar, 2018). Thus, the benefits of local creative culture are utilized by companies to develop a wide range of innovation, and consequently increase their own competitiveness. For instance, the relationship between technological innovation and economic growth has been demonstrated by Kogan et al. (2017). Complementarities between firms and industries, economic specialization, human capital and the agglomeration economy, determine the competitiveness of regions (Ochoa and Canizalez Ramírez, 2018). For this reason, companies are developing various types of cooperation, including cross-sectoral links with innovative companies in the cultural and creative industries. This unique sector combines the creation, production and commercialization of creative content that is intangible and cultural in nature. However, the creative industry also needs to be seen in the context of digitization, not just culture-based creativity (Moore, 2014). The cultural and creative industries include, for example, art, performance arts, music, design, crafts, fashion, architecture, film, entertainment, culture, games and media. In some cases, this sector includes R&D which is considered to be highly innovative. Thus, the cultural and creative industries have considerable innovation potential, which is reflected in their activity in fields such as trademarks (Castaldi, 2018). Cross-sectoral cooperation is a means of discovering breakthrough innovations in general; hence, links between traditional industries and the cultural and creative industries may be beneficial from this point of view. Cross-sectoral R&D is one of the prospective ways to catalyse cooperation and increase competitiveness. Agglomeration effects, in connection with both digitization and urbanization, support the growth of productivity at companies' level (Tao et al., 2019). As a result, innovation and creativity are becoming essential elements of various development strategies. Consequently, at macro-level, the Creative Economy concept has been derived by combining the innovation concept with creativity in the cultural and creative industries. The importance of the cultural and creative industries is growing in the post-industrial economy, due to their ability to generate high added value and increase employment; while growth in this sector is above average, compared to traditional industries (De Propris, 2013). The overall innovative capability of the cultural and creative industries is determined by the internal factors at company level, as well as a broader regional context. For example, both the size of the company and venture capital availability have a positive effect. On the other hand, development is negatively affected by firm age (Rodríguez-Gulías, Fernández-López and Rodeiro-Pazos, 2020). In addition, it is appropriate to consider the role of local networks and institutions in the stimulation of development. In this context, local networks and institutions are regarded as repositories of skills and knowledge.

Moreover, it should be understood that policy can facilitate the reorganization of local knowledge into new production frameworks. Depending on capabilities of various actors, it is possible to contribute to the development of post-industrial regions via efficient utilization of the embedded skills in traditional industries (Comunian and England, 2019); this capability can also be reflected in the use of Industry 4.0 technologies (Urbinati et al., 2019).

2. METHODOLOGY

The mapping was performed on teams of public R&D organizations operating in the field of Industry 4.0 in Slovakia. In the first step, data mining was used to identify R&D teams involved in the trans-European R&D network projects under Horizon 2020 schemes. The supported projects under Horizon 2020 were selected as being relevant to the nine technological domains of Industry 4.0, namely: advanced robotics, industrial internet and IoT, simulation, augmented reality, additive manufacturing, big data, cloud, cyber security, and artificial intelligence. These technological domains represent the strategic priorities of the Slovak Republic (Balog and Herčko, 2020). In total, four internationally respected teams at the domestic public R&D organizations were identified. Subsequently, these R&D teams identified their strategic partners from domestic public R&D organizations. The network mapping was carried out by means of a questionnaire survey. The identified core network consists of a total of 20 teams of public R&D organizations relevant to the various Industry 4.0 technological domains. Indeed, this network can be considered as a core R&D cluster of public R&D organizations in Slovakia relevant to the Industry 4.0. The teams are located at the following public organizations: the Slovak University of Technology in Bratislava, the Technical University of Košice, the University of Žilina, and the Slovak Academy of Sciences. These R&D teams' cooperation with other research institutes operating in the field of cultural and creative industries was subsequently mapped through a questionnaire survey, followed by personal in-depth interviews. Both procedures were conducted in the period from November 2019 to February 2020. The respondents involved in the survey were predominantly managers of R&D teams. The aim of the survey was to identify the R&D focus on specific Industry 4.0 technology domains, as well as cooperative linkages within the cultural and creative industries. Personal interviews made it possible to verify the findings of the questionnaire survey and to obtain more detailed insights into the cooperation.

3. RESULTS

3.1. Technological focus

All the research teams of the public R&D organizations operate in various technological domains of Industry 4.0. The mapping shows the relative heterogeneity of their scientific focus. For instance, there is no team operating in all nine technology domains, while one carries out R&D in eight technological areas. Most of them operate in four or five domains, respectively. Interestingly, only one team is focused on one technological area (Fig. 1). This directly points to the diversity of focus in the workplaces of public R&D organizations that operate in the Industry 4.0 areas, and indirectly suggests the interconnection of technological domains.

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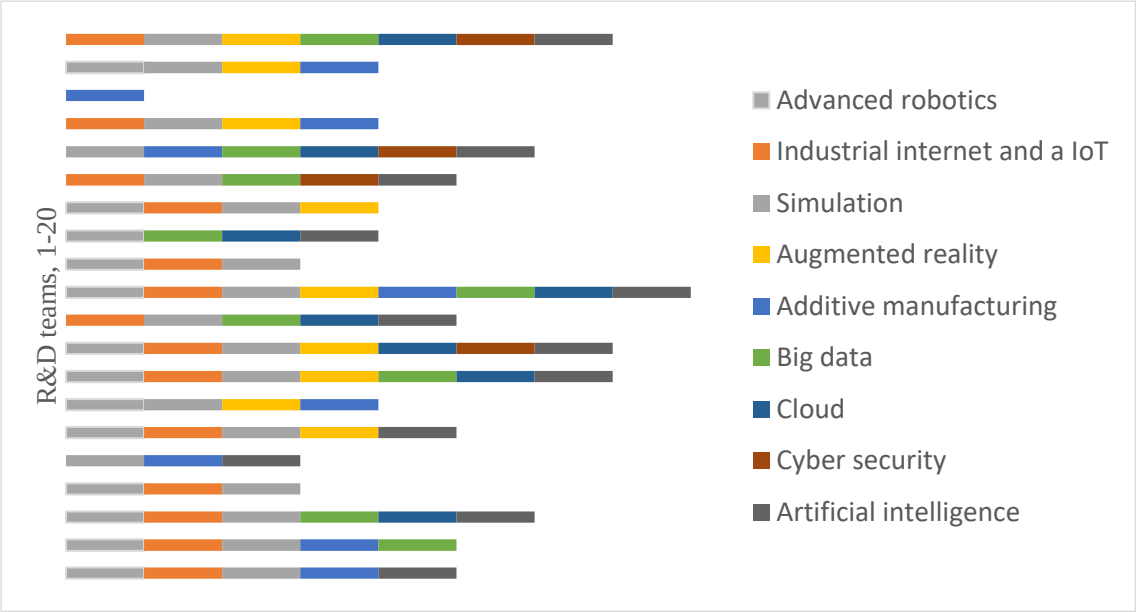

Figure 1: Technological focus of R&D teams in the Industry 4.0 technological domains (Source: own research)

The public R&D organizations are predominantly dealing with the following technological domains: simulation, industrial internet and IoT, advanced robotics, and artificial intelligence. These four areas cumulatively cover almost 60% of all technological priorities of public R&D teams, representing an informal scientific cluster. Up to 90% of them deal with simulations, which – together with robotics and industrial IoT – represent the most important technological domains. Moreover, the importance of these domains, in terms of business needs and industry transformation goals, were emphasized by the majority of teams. The least important area, according to the number of R&D teams, is cyber security, which is addressed by only 20% of respondents from the environment of public R&D organizations involved in the identified R&D network (Fig. 2). Nevertheless, all teams consider this area to be highly important and potentially beneficial prospective; yet according to the interviews, R&D capacities are strongly focused on other technological domains.

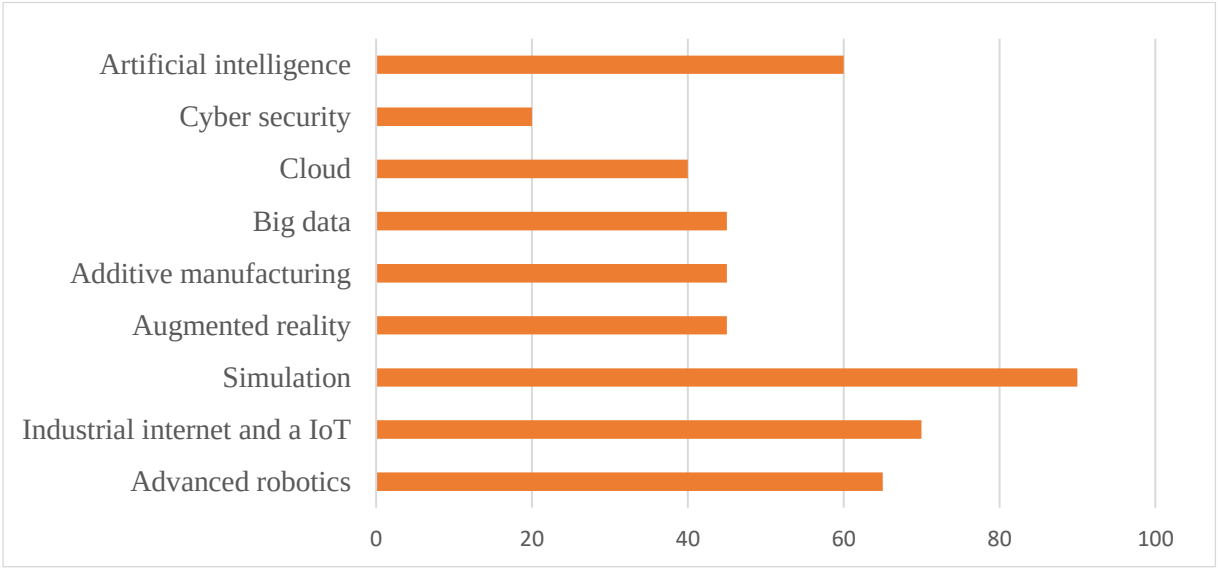

Figure 2: Distribution of technological priorities (% of respondents) (Source: own research)

Public R&D organizations must have sufficient human resources, as a fundamental precondition for maintaining high-quality research within the various comprehensive technological domains of Industry 4.0. The survey identified the organizations' available human resources in general. There are almost 600 experts working within the identified R&D cluster (Table 1). In addition, the overall theoretical potential of human resources in the field of Industry 4.0 was determined; it represents more than 20% of all national capacities in the university environment in Slovakia (Balog and Kotorová Slušná, 2020).

	Professors	Associate professors	Assistant professors (PhD)	PhD students
Total number	71	128	200	188

Table 1: Available human resources
(Source: own research)

According to the survey, there is a sufficient amount of human resources available for the implementation of R&D in selected technological domains. It seems that the identified R&D cluster has a high potential to generate innovative solutions. In terms of the regional distribution of human resources, capacities are distributed heterogeneously. Most researchers are located in Bratislava and Košice, as this is where the largest domestic public R&D organizations are located.

3.2. Cooperation with the cultural and creative industries

The Industry 4.0 teams of public R&D organizations cooperate with the cultural and creative industries in various ways. Up to 50% of the total number cooperate with the cultural and creative industries; however, there is no cooperative pattern describing the link between technological domains and creative industries. This means that teams operating in various technological domains cooperate with the highly innovative cultural and creative industries (Fig. 3). Relatively, the highest (apparent) level of cooperation with the creative industries involves R&D teams that operate in the cloud and cyber security domains. On the contrary, a slightly lower (apparent) level of cooperation was recorded for R&D teams operating within large domains such as simulation, artificial intelligence, industrial internet and IoT, and advanced robotics. The level of cooperation was measured as the percentage of teams operating in a certain domain that stated cooperation with cultural and creative industries, out of the total number of teams operating in that domain.

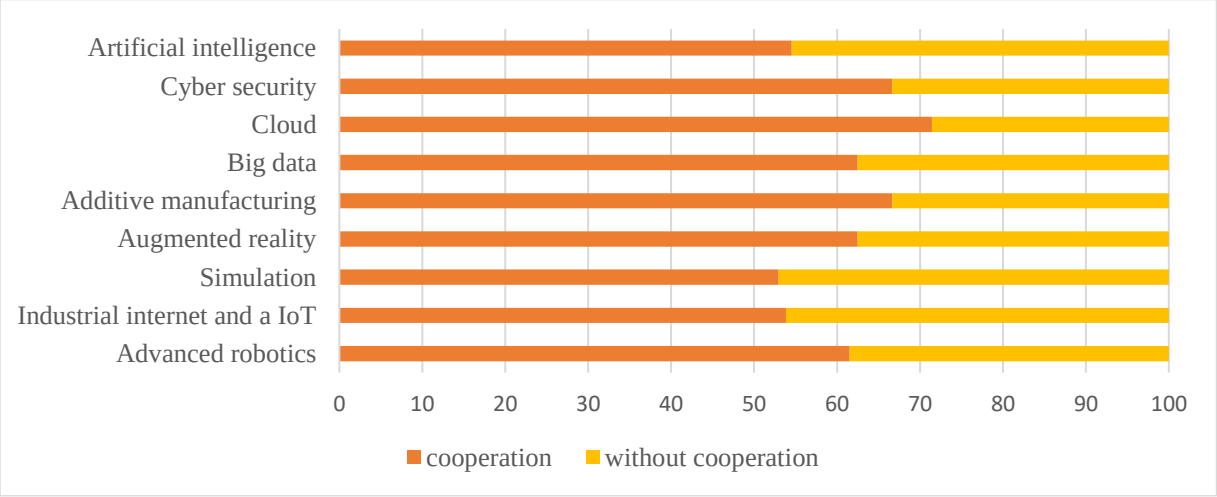

Figure 3: Cooperation with the cultural and creative industries (%)
(Source: own research)

In absolute terms, however, teams operating in a larger number of domains cooperate more intensively. This indicates that cooperation intensity is linked to the technology domain size, represented by the total number of R&D teams. Hence, teams in larger domains cooperate more intensively in general. In other words, the Industry 4.0 R&D teams' cooperation with cultural and creative industries is more developed in domains with a large number of actors. Specifically, the areas of simulations, the industrial internet and IoT, advanced robotics, and artificial intelligence, represent not only the largest areas in terms of specialization, but also the areas with the highest degree of cooperation with the cultural and creative industries (CCI) (Fig. 4). The main factors catalysing such cooperation are unique research projects, and demands from the economy and/or public authorities with specific needs (e.g. transcription and speech recognition in court proceedings).

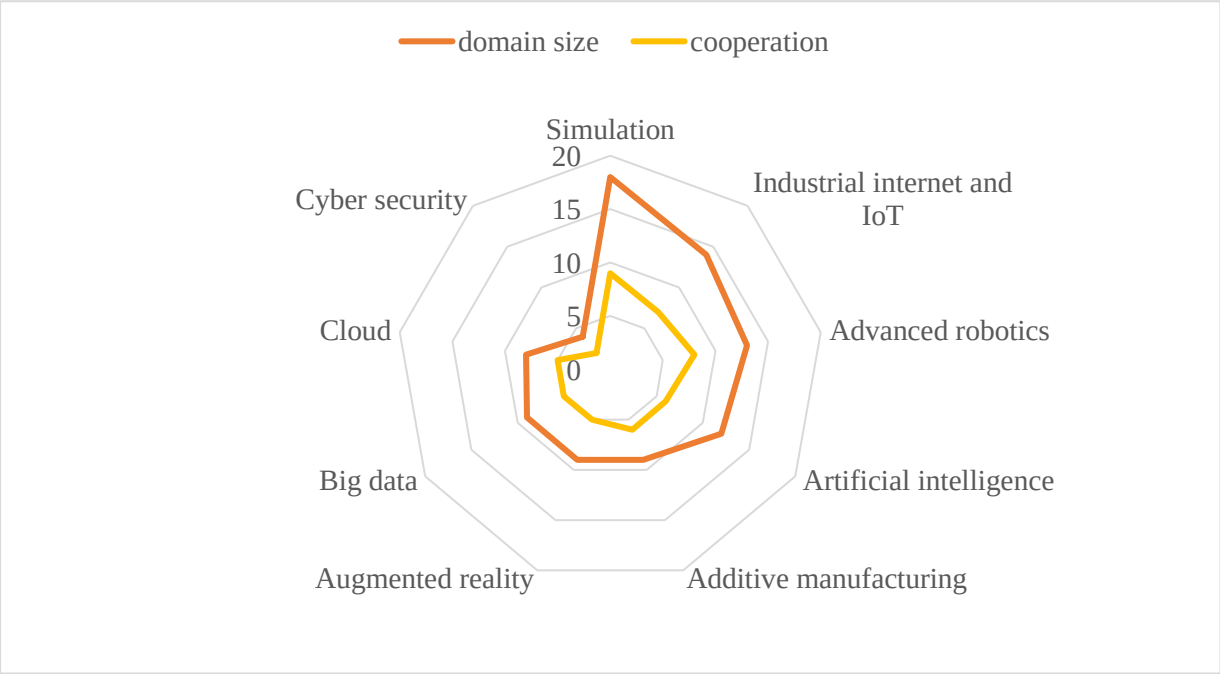

Figure 4: Size of the technological domain and cooperation with creative industries (number of teams)
(Source: own research)

The R&D cooperation is primarily carried out with other public R&D organizations operating in the cultural and creative fields (although other private innovative companies could be involved in those cooperations as well). The various cooperations have a different character and focus. The highest cooperation intensity was found in the field of industrial design, where the cooperation focuses primarily on the design of robots and robotics-related solutions, as well as other technologies associated with automation and digitalization within industry. The cooperation was stimulated both by the unique companies' needs, and by the public R&D organizations' direct efforts to provide higher added value to current and future customers. The identified teams carried out a variety of R&D-based projects. For instance, respected designers in the automotive field cooperated with the Tier 2 company. The aim of this project was product development, with an emphasis on the interlinking of modern and timeless design with functionality. A specific type of cooperation was found in the field of artificial intelligence, where there was a focus on language recognition and/or processing of extensive audio-visual data, as well as the development of speech technologies in the Slovak language. This type of cooperation was even identified by several teams dealing with various issues related to Industry 4.0 technological domains.

This indicates a growing demand for the implementation of highly sophisticated language recognition in the industry. The cooperation has a regional character, in that Industry 4.0 R&D teams cooperate with other public R&D organizations operating in the creative industries located primarily in the same region (Fig. 5). Hence, cooperation is stimulated by geographic proximity to the available highly innovative possible partners. Most industry-related R&D teams are located in the cities of Bratislava and Košice, with a high density of cultural and creative stakeholders. This fosters direct cooperation among all stakeholders.

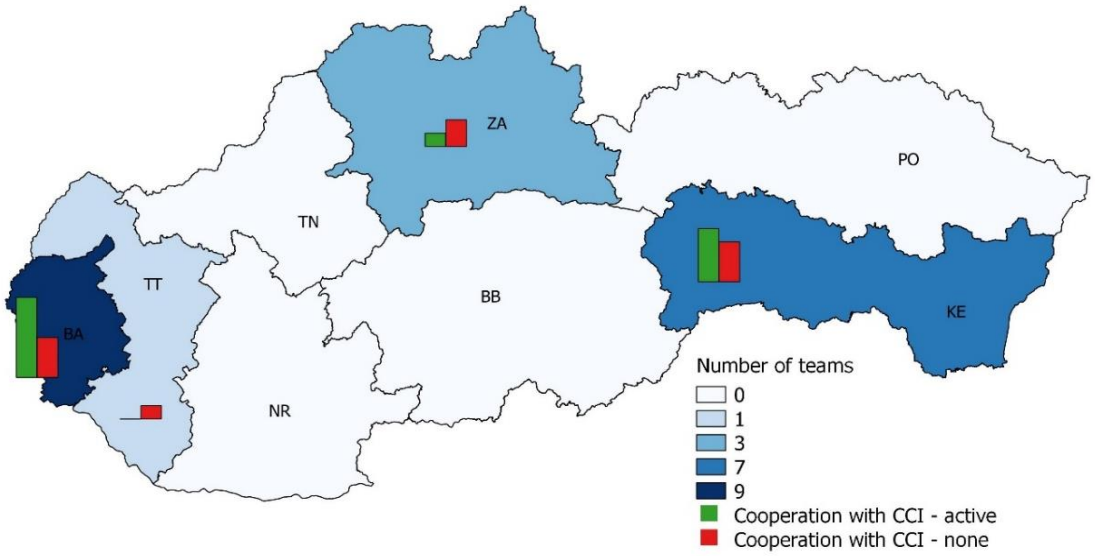

Figure 5: Regional distribution of Industry 4.0 teams and cooperation with creative industries (Source: own research)

The importance of the regional proximity of cultural and creative industries, such as design, industrial design, architecture or performing arts, was highlighted during the in-depth interviews. Respondents stated that the decision to develop a collaboration is significantly stimulated by this factor. In addition, some collaborative projects were catalysed by the specific needs of industrial customers who were able to identify specific functionalities of unique products. The teams of public R&D organizations operating in the areas of Industry 4.0 viewed cooperation with the creative industry actors in a positive light. As many as 30% of respondents considered the cooperation to be very beneficial, and 70% regarded it as beneficial (Fig. 6). None of the teams assessed the cooperation negatively. This points to the promising prospects of cooperation and well-managed social interactions between significantly different R&D areas with uneven expectations and culture.

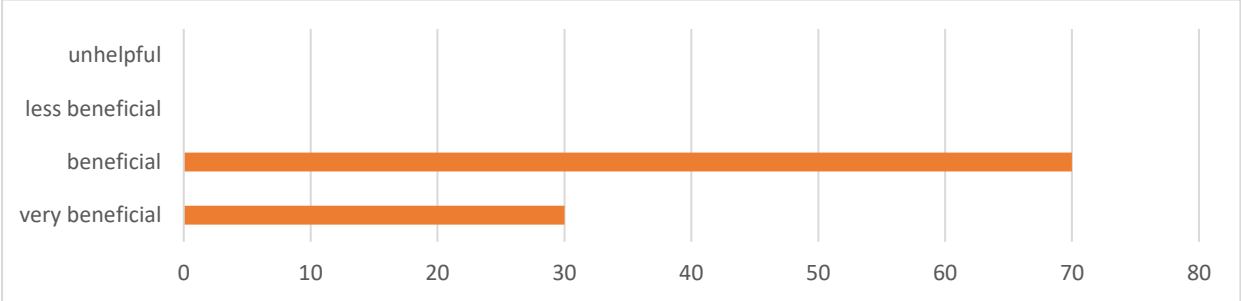

Figure 6: Quality of cooperation (%) (Source: own research)

The cooperation of Industry 4.0 teams was predominantly carried out with other public R&D organizations that focused on the cultural and creative industries. All teams expected further cooperation, which should increase the added value in technology-based development. The prospect of further cooperation between technology-oriented teams and cultural and creative industries indicates that the development of Industry 4.0 in some technological domains is linked to multidisciplinary R&D. The cultural and creative industries thus represent one of the areas in which it is necessary to support cooperation that will contribute to increasing the added value of R&D projects, which are implemented according to the needs of various market and non-market stakeholders.

4. CONCLUSION

The development of Industry 4.0's technological domains is largely perceived through the traditional prism of strictly technological development carried out by R&D organizations, and the subsequent commercialization by the industry. However, in order to create innovative solutions with high added value, public R&D organizations cooperate with other sectors. This paper was focused on the identification of links between Industry 4.0, represented by public R&D organizations operating in various technology domains of the Industry 4.0, and cultural and creative industries, represented by public R&D organizations operating in the highly innovative cultural and creative industries. The identified teams of the public R&D organizations carry out the majority of their activities in the following technological domains: simulation, industrial internal and IoT, advanced robotics, and artificial intelligence. As many as half of all teams cooperate with other public R&D organizations in the cultural and creative industries. The identified cooperation takes place on a regional basis, preferably with regional public R&D organizations. The highest intensity of cooperation was identified in the field of industrial design, focusing mainly on advanced robotics and language recognition, with a connection to artificial intelligence. The cooperation itself is positively assessed by public R&D organizations operating in the Industry 4.0, as it was found that real knowledge, applicable in industrially attractive products or processes, was obtained thanks to such cooperation. In addition, opportunities for further collaboration between researchers in the field of Industry 4.0 and the cultural and creative industries were indicated. More details regarding the course and benefits of the cooperation could be obtained by studying the topic from the point of view of R&D teams in cultural and creative industries. In conclusion, the future development of Industry 4.0's technological domains is linked to cooperation among various technological and non-technological fields, via comprehensive interdisciplinary R&D. One of the promising areas for the creative development of Industry 4.0 is cooperation with the cultural and creative industries. These include a number of highly innovative non-technological fields that have the potential to stimulate the development of technologies and industry. Policy makers should therefore pay attention not only to supporting purely technological domains; they should also identify new prospective interdisciplinary topics/areas that need to be developed effectively via a tailor-made approach, or through promoting intersectoral cooperation in general.

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LITERATURE:

1. Balog, M. and Herčko, J. (2020). Industry 4.0 – Technological priorities in the Slovakia. *Prognostické práce – Foresight, Analysis and Reccomendations PP – FAR*, 12(1), pp. 5-21, DOI:10.31577/PPFAR.2020.12.001
2. Balog, M. and Kotorová Slušná, Ľ. (2020). How to Identify Gross R&D Potential in Industry 4.0. *Economic and Social Development: Book of Proceedings. 56th International Scientific Conference on Economic and Social Development*, p.116-125.

3. Beier, G. et al. (2020). Industry 4.0: How it is defined from a sociotechnical perspective and how much sustainability it includes - A literature review. *Journal of Cleaner Production,* 259, p. 120856, DOI:10.1016/j.jclepro.2020.120856
4. Burger, P. (2017). Funding structure of the European and North American Clusters: results from an independent questionnaire. *Ekonomický časopis*, 65, pp. 485-504.
5. Cagáňová, D. et al. (2019). Intellectual Capital as a Key Factor in the Automotive Industry. *ACM Mobile Networks and Applications*, 24(6), pp.2024-2031, DOI:10.1007/s11036-018-01206-2
6. Castaldi, C. (2018). To trademark or not to trademark: The case of the creative and cultural industries. *Research Policy*, 47(3), pp.606-616, DOI: 10.1016/j.respol.2018.01.006
7. Castelo-Branco, I., Cruz-Jesus, F. and Oliveira, T. (2019). Assessing Industry 4.0 readiness in manufacturing: Evidence for the European Union. *Computers in Industry*, 107, pp.22-32, DOI: 10.1016/j.compind.2019.01.007
8. Chiarello, F. et al. (2018). Extracting and mapping industry 4.0 technologies using wikipedia. *Computers in Industry*, 100, pp.244-257, DOI:10.1016/J.COMPI ND.2018.04.006
9. Comunian, R. and England, L. (2019). Creative clusters and the evolution of knowledge and skills: From industrial to creative glassmaking. *Geoforum*, 99, pp.238-247, DOI: 10.1016/j.geoforum.2018.02.009
10. De Propris, L. (2013). How are creative industries weathering the crisis? *Cambridge Journal of Regions, Economy and Society*, 6(1), pp.23-35, DOI:10.1093/cjres/rss025
11. Kogan, L. et al. (2017). Technological Innovation, Resource Allocation, and Growth. *The Quarterly Journal of Economics*, 132(2), pp.665-712, DOI:10.1093/qje/qjw040
12. Nohara, T., Okamura, Y., Kawahara, S. (2016). Research for a comprehensive and active planning method in an industrial-residential mixed area focused on Ota creative town vision in Ota ward, Tokyo. *Journal of the Malaysian Institute of Planners* (IV), p. 369-382.
13. Ochoa, E. and Canizalez Ramírez, P. (2018). Cultural industries and spatial economic growth a model for the emergence of the creative cluster in the architecture of Toronto. City, *Culture and Society*, 14, pp.47-55, DOI: 10.1016/j.ccs.2018.03.001
14. Rodrigues, M. and Franco, M. (2020). Networks and performance of creative cities: A bibliometric analysis. *City, Culture and Society*, 20, p.100326, DOI: 10.1016/j.ccs.2019.100326
15. Rodríguez-Gulías, M., Fernández-López, S. and Rodeiro-Pazos, D. (2020). Innovation in cultural and creative industries firms with an academic origin (CCI-USOs): The role of regional context. *Technovation*, 92-93, p.102044, DOI:10.1016/j.technovation.2018.06.007
16. Tao, J. et al. (2019). Agglomeration economies in creative industries. *Regional Science and Urban Economics*, 77, pp.141-154.
17. Ucar, E. (2018). Local creative culture and corporate innovation. *Journal of Business Research*, 91, pp.60-70, DOI:10.1016/j.regsciurbeco.2019.04.002
18. Urbinati, A et al. (2019). Creating and capturing value from Big Data: A multiple-case study analysis of provider companies. *Technovation* (84-85), (pp.21-36), DOI: 10.1016/j.technovation.2018.07.004

UNLOCKING THE POTENTIAL OF CREATIVE TOURISM TO SUPPORT TOURISM COMPETITIVENESS

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ABSTRACT

The post-covid period is becoming an opportunity to develop a specialized, more resistant and sustainable form of tourism in general. Key contributing factors will be the quality of human capital, which is the key element of creative economy. Given the importance of the tourism and travel sector, the necessary transformation of our current "position" is not possible without the transformation of tourism. Seeking to understand multiple, diverse and complex relationship between tourism and creative economy, this research examines interconnection among those two concepts.. The creative economy is a new direction for the development of the world economy, based on interaction between the human creativity, ideas, knowledge, intellectual property and ICT technology. This paper explores the potential role of the creative economy unlocking the creative tourism potential that acts as catalysts in increasing and contributing tourism competitiveness and sustainable tourism development. How could creative economy restore the competitiveness of tourism? The aim is to show the importance of the creative industries as part of the regenerative economy in tourism which could be achieved through the promotion of creative tourism. Therefore, this paper examines the advantages and points out creative sector as "catalyst" of change. Creative sector has the power to influence and inspire present and future generations and therefore contribute to a more sustainable development path. Combining creative sector through transformative tourism is a future solution for creating a quality community and sustainable tourism development. The paper provides a comprehensive review and analysis of existing literature on the subject with the empirical part that involves a comparative analysis of tourism and creative industries using Mediterranean EU economies as examples. The basic question was: can the laws of tourism competitiveness and economic development be applied in the evaluation and monitoring of creative tourism? The paper provides a new focus of research on creative economy that is significant for understanding the symbiotic relationship that exists between creative economy and tourism in promoting tourism competitiveness.

Keywords: *Creative tourism, Creative economy, competitiveness, comparative analysis*

1. INTRODUCTION

As one of the fastest-growing industries today, tourism can significantly contribute to people's lives and our planet. In order to contribute to such an idea, countries should support tourism policies oriented towards achieving optimal use of environmental resources, respect the socio-cultural authenticity of host communities and provide socio-economic benefits for all. Tourism stakeholders have a responsibility not only to respond to this societal paradigm shift but to step forward and lead it. Tourism itself has the power to influence the individual perceptions, perception of communities and countries, and what this study emphasizes is the potential development of a transformative change in tourism that seeks to create a new dimension with an emphasis on enhancing the society progress through the creativity, the quality of life of individuals including all actors and stakeholders.

During times of inevitable change, creativity is a key factor in achieving sustainable growth and development of tourism destinations. The growing interaction between tourism and creativity has been driven by the search for alternative models of tourism development and the growing creative economy (Richards, 2019; Long & Morpeth, 2016; OECD, 2014). Creative industry and tourism are two industries that generate new dimensions that influence creative tourism (OECD, 2014). They both share many fundamental characteristics, and there is already an existing level of engagement among them (Sandell & Skarveli, 2016). OECD (2014) has laid the foundations and emphasized the need to establish linkages with tourism and the creative industry. The creative industries offer interesting opportunities for the growth and development of tourism, including the potential to generate tourism demand, develop new tourism products and enhance place quality and attractiveness (OECD, 2014:5). Tourism itself is becoming one of the main drivers of economic growth in the field of culture and creativity (Richards, 2011). The creative-economy (CE) research are topics of great interest to the people professionally concerned with the future of the world in the context of the challenges induced by the fourth industrial revolution. One of the biggest challenges of our modern society is to address the differences in competitiveness and economic performances among different countries and regions based on core principles for a smart, sustainable and inclusive development. In accordance with the above-mentioned and as a response to global challenges, health crises, socio-economic and technological changes in the present time, our research addresses the creative destination concept and analyze tourism and creative economy interaction. The creative industry is an important factor, and creative tourism is an important second element for achieving local, sustainable development of a destination (Richards and Wilson, 2006).

2. METHODOLOGY

First part of the research is based on the comprehensive review and analysis of the existing literature, reports, and studies on the subject. To explore the dimension of creative tourism and creative industry and determine their need for tourism transformation, this research will rely on the qualitative approach by gathering opinions and solutions on creative economy concept, creative environment and trans-modern implications and the power of tourism. Therefore, the key aim of this research was to detect different concepts, terminologies that point in the same direction of tourism's transformative potential through creative industries. The empirical part includes a comparative analysis of tourism and the creative economy on the example of EU economies with an emphasis on Mediterranean EU economies for 2019. Correlations and interdependencies of tourism and economic indicators, economic and tourism competitiveness, as well as the importance of creative economy, creative goods and services for tourism were analyzed. In the in-depth comparative analysis, authors used indicators of economic development (GDP per capita) and indicators of tourism development (Arrivals of tourists), as well as indicators of tourism competitiveness and indicators of creativity. EU economies were formed into 4 groups: i) lowe income group; ii) lower middle-income group; iii) upper middle-income group; iv) high income group. Travel & Tourism competitiveness index (TTCI) as independent variable was compared to Global competitiveness index (GCI), Global creativity index, Global innovation index (GII) and Creative outputs; therefore, valuable conclusions were drawn.

3. LITERATURE REVIEW

3.1. Creative tourism concept

Although the concept of creative tourism arises from cultural tourism (Richards & Wilson, 2006) creative tourism is still a new paradigm. According to Richards (2005), the beginnings of creative tourism go back to the second half of the 90's and bind to Eurotex project when the European Commission seek to find ways to increase the sales of locally produced produce in

rural areas. The conclusion was that majority of tourists were not only willing to buy crafts products, but they were also interested in seeing how this product is made and in learning the skills for producing those products. Creative tourism has emerged as a response to the serial reproduction of cultural tourism, ubiquitous changes in trends and tourists' behavior, commodification of tourism product/service, and the challenges that cultural destination management faces. It is considered to be a new form of tourism that separates itself from mass tourism and is associated with the development of niche products of urban tourism (Waitt and Gibson 2014). Among several definitions, we will single out one of the first, raised by Richards & Raymond (2000), where creative tourism is defined as "tourism which offers visitors the opportunity to develop their creative potential through active participation in learning experiences which are characteristic of the holiday destination where they are undertaken"(Richards & Raymond, 2000:18). Richards (2002) defines the advantages and typical characteristics of creative tourism over traditional tourism:

1) creativity is unified and rare – due to its rarity, creative tourism more easily creates a certain value;
2) creativity adds value – creative tourism develops faster than other forms of tourism;
3) creativity is a sustainable process – and creative resources are constantly renewable;
4) creativity is mobile;
5) existing resources can be used with not necessarily high investments.

In order to promote and distinguish specific creative experience, global networking between destinations that share common objectives is of extreme importance. Before creative tourism, the concept of experiential tourism was developed in line with the paradigm associated with the shift from selling services to selling experiences (Pine II & Gilmo,1998). Therefore, it is vital to differentiate these two concepts, whereby creative tourism aims to acquire specific knowledge, learning, and cultural-oriented experiences in an authentic and memorable manner (UNESCO 2006; Hung et al. 2014). Creative tourism differs from cultural tourism in that it requires active participation and interaction on the part of tourists (Jelincic and Zuvela 2012; Tan et al. 2015). Creative tourism can encourage local economic development as well as social and cultural growth by diversifying and innovating the tourist experience. Hence, we can state that creative tourism has grown from experiential and cultural tourism to a more sustainable form of tourism. Growing demand for more authentic experiences and increased competition in terms of supply leads to the need to create differences in approaches and involvement, framing a creative tourism niche (Richards, 2020). Modern, educated tourists are seeking to gain meaningful knowledge and an added value to their personal experiences. They are more actively involved in communities and their local culture and creativity. From the supply point of view, we are facing new trends and challenges. The concept of creative tourism produces a strong co-creation effect (Binkhorst et al, 2009) between creative resources, communities, and tourists, where the host community is a major player in achieving sustainable benefits for the development of the communities in general. Destinations that are interested in developing unique competitive advantage through creative tourism nature are facing an intangible double benefit, moreover, every creative service has a different nature, using tangible and intangible resources. Tourism development through creative elements shares positive impacts on small destinations and municipalities through:

1) generating and expanding the employment and income in creative industries and other related sectors;
2) spill-over effects and upgrade effect through creative dimension;
3) strengthening small and medium enterprises
4) preventing the depopulation and settlements of villages (if creative resources are managed properly)

5) preserving the traditional identity through the popularization of local customs, music, and costumes, incorporating traditional handicrafts
6) preserving ancient arts and crafts by popularizing "creative entrepreneurship"; developing the livelihood of local people;
7) preserving the cultural heritage by raising awareness among the communities, popularizing creative workshops, educational and recreational programs, innovating tourism;
8) placing additional emphasis on the unique traditional charm of small municipalities;
9) tangible and intangible double benefit;
10) pride of the local population – community empowerment;
11) increased competitiveness of the destination;
12) economic sustainability;
13) contributing income for the local people and supporting the local economy in the present
14) decreasing the seasonality promote all year around tourism
15) increasing spending in the destination.

3.2. Creative economy concept

The concept of the creative economy began to spread abruptly in the late 1990s when, in search of new development directions, the creative economy emerged as one of the main foundations of economic growth (Novotny, 2015). Initially, the traditional cultural service approach was replaced by the concept of the creative industry through the spill-over effect of the creative economy concept to the rest of the economy, thus becoming a major driver of growth in developing countries (UNCTAD, 2008). Unfortunately, there is still no uniform and standardized definition of the creative economy; therefore, the term creative economy is in a constant mutation that depends on the relationship between human creativity, intellectual property, research, and development (R & R&D), knowledge, and technologies. It was popularized in 2001 by John Howkins and, due to its broad scope, the creative economy is recognized as a meaningful contributor to national gross domestic product and noted as a powerful world transformative force (UNCTAD 2018). In a broader economic sense, the creative economy is defined as an economy that uses the power of the human capital as the most important factor in creating new values (Kloudova & Chwaszcz, 2011). UNCTAD (2010: 50) defines the creative economy as an "economic concept based on creative activities that can potentially generate economic growth and development." The creative industry is an important economic driver growing at a higher rate and has the potential to create growth outside their sector (EC, 2006). According to Ernst and Young (2015), global creative economy revenues have reached 2,250 billion $ (excluding software and internet firms) with the highest value of 1,106 billion $ in creative expression (performing and visual arts, music, audiovisual, and radio).Creative industry is the heart of creative economy. The first mention of the creative industry dates back to 1994 in Australia, which then expanded to the UK, where creative industries were defined as "industries which have their origin in individual creativity, skill, and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property" (DCMS, 2001:5). From the tourism perspective, the creative industry is defined as a knowledge-based creative activity that links producers, consumers, and places by utilizing technology, talent, or skill to generate meaningful intangible cultural products, creative content, and experiences (OECD, 2014: 9). The very issue of understanding the creative industry goes back to its key definition. Definition, statistics, general classification, and discussion differ from one country to another. The European Parliament defines them as "industries that are based on cultural values, cultural diversity, individual and/or collective creativity, skills and talent with the potential to generate innovation, wealth and jobs through the creation of social and economic value, in particular from intellectual property" (EC, 2016:10).

This conceptual definition emphasizes that knowledge is a basic driver of creative industries (OECD, 2014). Nevertheless, the creative industry has been collectively observed and researched since 1998, when the British DCMS first defined the range of activities that form cultural and creative industries (DCMS, 1998). It is an "industry" that should be understood as "abstract" because, although it has elements of industrial production, it cannot be equated with the traditional understanding of the industry. Modern research reveals that this is an extremely dynamic sector composed of a number of subsectors and activities.

4. INTERACTION BETWEEN CREATIVE INDUSTRY AND TOURISM

Creative tourism is unthinkable without creative industry and it's sector. This sector is becoming an unavoidable and valuable component of new regenerative (modern postindustrial) economies. Creative sector promotes destination identity and has important value in fostering cultural and creative diversity. The relationship between culture and tourism has been recognized as one of the main and largest sources of tourism growth in recent decades (OECD, 2014; EC, 2011). As the tourists needs have changed throughout history, today we can speak of a growing need for creative and memorable experiences. We are also witnessing the growing importance of creativity as a special element contributing to innovation and development in general. Since the creative economy concept is not a self-sufficient dimension (Innocenti & Lazzeretti, 2019), the interaction with other sectors and, in our research, interaction with tourism could result in increased competitiveness, local and regional development, and overall economic health. The creative industry and tourism form two interrelated dimensions that are intertwined creating the conditions for the development of a creative environment. Creative industries often cluster in urban areas due to the agglomeration of facilities, institutions, skills, infrastructure, capital, knowledge and practices (Florida 2002; Marques and Richards 2014). Except in cities, creativity and creative tourism can also emerge at locations beyond major cities, in smaller cities, even in rural areas (Flew 2013). It should be understood that creative industries are knowledge rich and require high levels of skilled human input (Florida 2002; UNESCO 2006), therefore, it is inevitable to create conditions for the development of a creative environment that would attract the creative class. Creative industries are directly contributing to jobs and growth in the tourism industry and becoming catalysts for local and regional development (Sandell & Skarveli, 2016; OECD 2014). Connecting tourism and creative industries brings many positive effects, and over the years, many destinations have adopted creative tourism development models (Richards, 2013; OECD, 2014). Innovation and creativity in tourism increase destination competitiveness and the growth of tourism economies, also contributing to creative economies in the case of urban-based creative tourism (Andres and Chapain 2013; Flew 2013). Realizing the potential of combining the creative sector through creative tourism is a future solution for sustainable development and inclusive growth. Given that creativity and creative tourism have their own specific characteristics, the management process needs to be adapted to these characteristics in order to make the most out of its advantages and potentials of incorporating a model of creative tourism into a certain tourist destination. Working with creative industries requires many adjustments for the holders of the tourist offer, which includes a change towards intangible, creative content. It is a substantial challenge for local and national authorities to understand the creative industry and its connection to tourism and accept the changes that the development of the creative economy brings. Creative resources promotes and enables small and local (craft) businesses development, use of local knowledge to improve destination growth and regeneration of economic activities; creates jobs and influence the local economy in positive way; seasonality is minimum and decreased; participatory approach stimulate residents to be proud of their village and identity; increase local products consumption; encourages creative competitiveness, increase well-being and assist in quality of life improvement.

Consequently, tourism impacts on quality of life of local community become an index of destination competitiveness and its image (Sariskumar & Bhavan, 2018). Changes are needed in the destination management itself given that creativity and creative tourism have their own specific characteristics, so the management process itself needs to be adapted to these characteristics in order to make the most of the advantages and potentials of incorporating a model of creative tourism in a certain tourist destination. The COVID-19 pandemic has affected the whole world, however, the important is to considers how current pandemic may change society, the economy, and tourism and provide the opportunity to reload our values. In order to reload our values, fight environmental changes, injustice, hunger, power and violence, we should accept a massive shift and follow transformative path.

5. COMPARATIVE STUDY OF EU COUNTRIES – CREATIVE TOURISM AND TOURISM COMPETITIVENESS

The growing importance of experiences and creativity in tourism and moving away from tangible cultural and heritage tourism to intangible resources have stimulated a "creative tourism" platform as a specific sub-field of traditional cultural tourism (Richards and Raymond, 2000). As the importance of creative industries expand, countries and regions around the world are positioning creative industries as the fundamental driver of tourism development, therefore, emerging tourism and creative industries (fashion, literature, design, gastronomy, film, traditional arts, and crafts, etc.) are a way to regenerate tourism experiences. Creative tourism can serve as a model of revitalization and regeneration and it can also help destinations that do not have a wide range of tourist products to expand their tourism activities, become profiled in the tourism market as authentic creative destinations that nurture culture, art, and other aspects of creativity. Developing adequate policy frameworks is of crucial interest for communities to bring together the consumer, producers, and the destination. Proactive strategical planning reduce possible negative effects such as localized inflation and increased cost of living, loss of local ownership, inappropriate destination images and brands, loss of biodiversity, destruction of heritage, changes in community structure, and others. By accepting the creative tourism concept in strategical management of a tourism destination, especially rural and small municipalities, some economic, socio-cultural, and environmental benefits are discussed. Development in that direction will stimulate efficient use of available resources and economic development in the destination by generating economic and social benefits for the communities and adding value to consumer experiences. In creative tourism research and conducted research, the question of data availability and comprehensiveness used to test theoretical hypotheses and prognostic models is raised. The creative tourism destination development model was presented using a comparative analysis of tourism and creative economy on the example of EU economies, emphasizing the Mediterranean economies of the EU. A database with data from 2019 has been formed. It was a pre-pandemic tourist year with the growing tourism and economic trends that marked the last decade. Based on this database, the correlations and interdependence of tourism and economic indicators, economic and tourism competitiveness, and the importance of the creative economy and creative goods and services for tourism were analyzed. In the in-depth comparative analysis, we used indicators of economic development (GDP per capita) and indicators of tourism development (Tourist arrivals), and indicators of tourism competitiveness and creativity indicators.

Table following on the next page

Table 1: List of indicators

Indicator	Description & Source
Travel & Tourism Competitiveness Index (TTCI)	Measures travel and tourism competitiveness of 136 economies through 4 subindexes: enabling environment, travel and tourism policy and enabling conditions, infrastructure, natural and cultural resources (1-7 best) (World Economic Forum, www.weforum.org)
Global Competitiveness Index (GCI)	Measures global economic competitiveness of 141 economies through 4 subindexes: enabling environment, human capital, markets, and innovative ecosystem (1-7 best) (World Economic Forum, www.weforum.org)
Global Creativity Index	Ranks 139 economies as the overall measure of creativity and prosperity based on 3Ts of economic development-technology, talent, and tolerance (0-1 best) (Martin Prosperity Group, martinprosperity.org)
Global Innovation Index (GII)	Ranks economies according to innovation capabilities. Published by Cornell University, INSEAD, and WIFO (UN). Includes 131 economies and relies on two subindexes: innovation input and innovation output (0-100 best) (Global Innovation Index, globalinnovationindex.org)
Creative Outputs	It is a pillar of innovation output (GII) composed of individual indicators: intangible assets, creative goods, and services, online creativity (0-100 best) (Global Innovation Index, globalinnovationindex.org)

Source: authors' research (databases)

EU economies are grouped according to the Travel & Tourism Competitiveness Index (TTCI) values into four groups. The size of TTCI correlates with the total number of tourist arrivals and tourist results, the size of domestic and foreign tourist consumption.

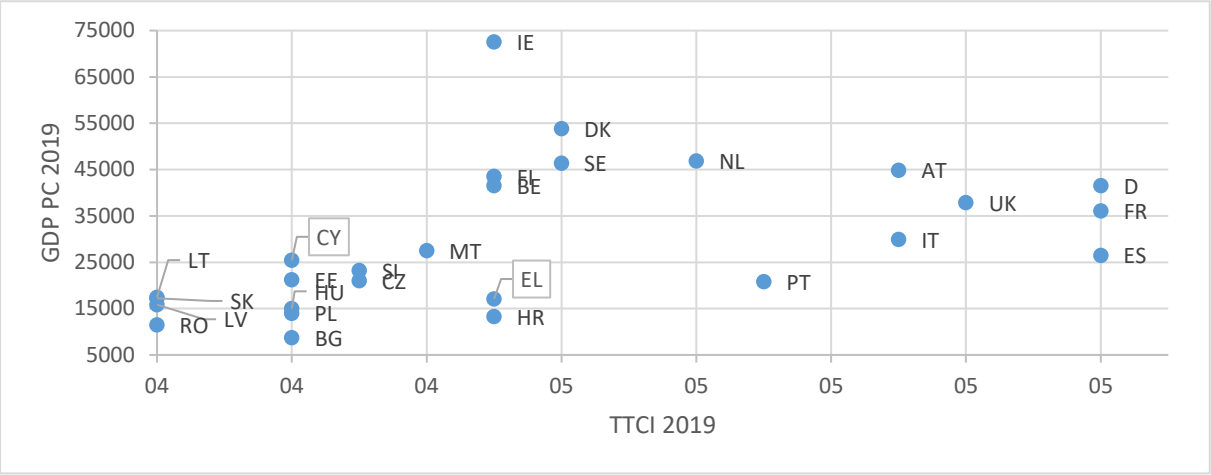
Table 2: Group of economies

Group	Description	Conclusion
Low-value TTCI group (4.0-4.4 overall index)	Southeastern European and Baltic states Mediterranean EU economies: Cyprus and Malta	These are primarily outbound tourism economies with lower levels of total travel & tourism GDP contribution. Cyprus and Malta are smaller tourism economies highly dependant on tourism with an important surplus in travel balance.
Lower middle-value TTCI group (4.4-4.8 overall index)	Highly developed Scandinavian and Benelux countries Mediterranean EU economies: Malta, Greece, and Croatia	Highly developed outbound tourism economies with a high level of living standard. In the case of Malta, Greece, and Croatia, they are highly dependent on tourism and tourism export.
Upper middle-value TTCI group (4.8-5.2 overall index)	Highly developed tourist countries Portugal, Italy, Austria, and the United Kingdom	This is a group of inbound tourism economies, except the United Kingdom, which was rated high due to the size and importance of the domestic tourist market and tourist offer.
High-value TTCI group (5.2-5.6 overall index)	Tourism leaders France, Spain, and Germany	France and Spain are the leading tourist destinations in the world according to the overall tourist indicators. Their travel balances are positive, although they are not the largest when viewed in terms of population. What is important to point out is the offer of the German tourist market, which, despite being the largest EU outbound tourism economy, ranks this country in the group of the most competitive EU economies in terms of tourism.

Source: authors' research (databases)

A comparative analysis was conducted by comparing these indicators with the TTCI movement, monitoring the position of each EU economies within the groups, and analyzing the changes and their causality. The basic question was whether the laws of tourism competitiveness and economic development could be used in assessing and monitoring the creative economy, i.e., creative tourism. Is there a difference in the movement of indicators and which indicators can be considered opportune for incorporating into the macroeconomic research model, which will be the next phase and continuation of this research? The first step was the analysis of TTCI and GDP per capita as indicators of economic development (Graph 1). Tourist countries, especially inbound tourism economies, have a high level of travel and tourism competitiveness (TTCI). The achieved level of tourism competitiveness is correlated with the level of economic well-being, according to the Tourism-Led Growth Hypothesis (THGH).

Graph 1: TTCI & GDP per capita – EU economies, 2019



Source: authors' research based on the Eurostat and Weforum database

All EU countries are in the group of high-income economies (GNI higher than 12,000 USD) according to the methodology of the International Monetary Fund. However, for the purposes of this research, we grouped EU economies into four groups with further conclusions.

Table 3: Conclusion

Group	Description	Conclusion
Low-income group (up to 15,000 EUR)	Southeastern European countries Mediterranean EU economies: Croatia	It is the smallest group comprising the least economically developed EU countries, including Croatia.
Lower middle-income group (15,000-30,000 EUR)	Southeastern European and Baltic states Mediterranean EU economies: Cyprus, Malta, Greece, Portugal, Cyprus, Spain	A group that includes a large number of EU countries and the largest share of Mediterranean EU economies
Upper middle-income group (30,000-45,000 EUR)	Developed European economies Mediterranean EU economies: Italy, France	The group with a relatively large share of countries and the largest share in the population. These are large markets for the supply and demand of all goods and services.
High-income group (higher than 45,000 EUR)	This group includes the most developed EU economies, led by Luxembourg, followed by Ireland, Benelux, and Scandinavian countries.	Countries that have specialized and focused on technology, innovation, education, and innovative products and services in recent decades.

Source: authors' research (databases)

In the continuation of the research, a comparative analysis of TTCI indicators with other indicators from the formed database was translated, where TTCI was treated as an independent variable (x value), while other indicators had the role of a dependent variable (y values). A separate graph was formed and analyzed for each of these relationships, from which the following conclusions were drawn.

Table 4: Conclusion

Relation (TTCI as the independent variable)	**The rank of Mediterannean EU economies (high-low)**	**Conclusion**
TTCI	TTCI rank: France, Spain, Italy, Portugal, Greece, Croatia, Malta, Cyprus	
TTCI & GDP per capita	GDP rank: France, Italy, Malta, Spain, Cyprus, Portugal, Greece, Croatia	From the conducted in-depth analysis, the presence of a correlation between the indicators of economic development of GDP per capita and the indicators of economic competitiveness can be concluded. Economies that achieve economic competitiveness represent strong markets for domestic and foreign tourism consumption, which ranks them among the leaders in terms of tourism competitiveness. We can confirm the hypothesis that tourism and tourism development are important in achieving the overall economic development of the destination. In the context of the development of creative tourism and creative services, we can assume these laws, especially for large markets. It turns out that the level of economic development is a significant prerequisite and lever for the development of the creative economy and creative tourism.
TTCI & GCI	GCI rank: France, Spain, Malta and Portugal, Italy, Cyprus, Croatia, Greece	
TTCI & Global Creativity Index	Global Creativity Index rank: France, Spain, Italy, Portugal, Malta, Croatia, Greece, Cyprus	The indicator of global creativity or the development of the creative economy shows a significant correlation with the indicators of economic development. It follows from the above that countries that have achieved a higher level of economic prosperity are also more creative, i.e., that they have implemented more creative products and services. This will have a positive impact on all economic activities, including tourism. Countries with the lowest creativity ratings – Croatia, Greece, and Cyprus – should use the creative economy and creative tourism lever to reduce the development gap compared to EU countries.
TTCI & GII	GII rank: France, Malta, Cyprus, Spain, Italy, Portugal, Greece, Croatia	As the second indicator of the development of the creative economy, the Global Innovation Index shows similar tendencies, except for Cyprus, which according to this methodology, was rated high. The above conclusions can be used with the indication that a detailed evaluation and comparison of the Global Creativity Index and the GII Index is needed here.
TTCI & Creative Outputs	Creative Outputs rank: Malta, France, Cyprus, Spain, Portugal, Italy, Croatia, Greece	For this research, the movement of the part of the GII indicator associated with the creative industry activities – Creative Outputs – is particularly significant. It can be concluded that the role and importance of the creative economy in increasing tourism competitiveness and overall economic results are expressed in the example of two small countries belonging to the lower-middle-income group. These economies have made the most of the resources of creative tourism (creative products and services) and implemented this in their tourism development. This should be the path and guidelines for all other tourism economies, especially Croatia and Greece, which are at the bottom of the Mediterranean EU economies group according to all observed indicators.

Source: authors' research (databases)

6. CONCLUSION

The repositioning of tourism through creative industries using creativity and innovative solutions is the starting point in achieving sustainable strategy goals for the future. Above all, tourism in harmony with creativity should form a new trend based on "experience, feelings, and emotions." This paper contributes to the existing literature on the theoretical significance of the creative industry and its contribution to developing a competitive destination through the creative tourism model. The effective integration between creative industries and tourism promotes the development of creative tourism and a creative tourist product. Creative tourism requires appropriate management and leadership to achieve sustainable growth and use the potential of "creativity" effectively. Therefore, connecting tourism and creative industry my increase possibilities of a destination by:

1) increasing the demand and changing the profile of visitors through the development of new and authentic experiences
2) building an image by increasing the use of creativity in marketing
3) developing small creative enterprises, creative environment, courses, experiences that are in the function of acting as a kind of "hub" in the creation of creative networks
4) developing an atmosphere that makes creative spaces even more attractive for creative workers, tourists, and local creatives
5) increasing the quality of life and the quality of the opportunities that creative tourism and the creative industry offer to attract creative talents
6) encouraging innovation through the creation of creative impulse and the development of new technology, which serves the development of creative tourism and as an incentive for creative industries to improve their business operations
7) encouraging exports through products that combine creative content, space, and culture
8) increased interest in local creativity
9) developing knowledge and skills causally related to the development of creative content, industry, and tourism between producers and tourists, visitors, and the local population.

Tourism provides the opportunity for both communities and tourists to use their creative potential. In order to promote creative tourism as a tool for rebirth, revitalization, and regeneration, there is a need to stimulate the existing tourism model by using local crafts, creating experiential travels, and innovating the production of souvenirs as a foundation for upgrading this model. Individuals, artists, who possess unique creative abilities should be placed in a new position to become promotors of the unique knowledge and transformed destination (Richards, 2016). The creative tourism concept could assist public policymakers and community planners when establishing the local planning and provide strategy formulation, implementation, and evaluation by:

1) helping to alleviate economic problems, creating jobs, and increasing the communities quality of life;
2) preserving the environment, the local culture, and its identity/image;
3) understanding the scope and importance of creative industries as a direction in contributing to national growth;
4) understanding how entrepreneurs in creative industries could transform the global economy, current position and future development, future projects and development strategies;
5) understanding how creative industries contribute to tourism development;
6) highlight transformative and creative tourism in generating and promoting creative industries and destination competitiveness.

In order to profit from the creative tourism model, above the needed national strategical foundation, strong marketing and branding, local orientations, and co-creation play a more

important role in conducting creative pillars. The creative industry, in this case, represents an "engine" in creating valuable creative tourism products and services. The cross-sectoral relationship between these two multi-dimensional industries, the evaluation of creativity and creative tourism, and ultimately their contribution to the broader economy and competitiveness is a challenge for future research. The challenge is also not only in understanding the creative industries and how they are related to tourism but above all in understanding the importance of the creative economy and the overall economic change it encourages with its growth. A significant gap exists in examining the processes through which creative tourism activities are contributing financially to a creative economy. The present study extends knowledge on how creative tourism and creative industry could form a model that could boost the economy. Therefore, this research represents a contribution in theoretical terms by defining the importance, elements, and benefits of the mutual interaction between the creative industry and tourism.

LITERATURE:

1. Andres, L., & Chapain, C. (2013). The integration of cultural and creative industries into local and regional development strategies in Birmingham and Marseille: towards an inclusive and collaborative governance? Regional Studies, 47(2), 161–182
2. Binkhorst, E. and Dekker, T. Den (2009) Agenda for co-creation tourism experience research. Journal of Hospitality Marketing and Management, 18, 2- 3, 311 – 327.
3. Buaban, M. (2016). Community-Based Creative Tourism Management to Enhance Local Sustainable Development in Kanchanaburi Province, Thailand.
4. Department of Culture Media and Sport (United Kingdom) (1998), "Creative industries mapping document 1998", DCMS, London.
5. Department of Culture Media and Sport (United Kingdom) (2001) The creative industries mapping document 2001. DCMS, London.
6. Ernest and Young [EY] (2015) Cultural times. The first global map of cultural and creative industries. Ernest and Young. http://www.worldcreative.org/
7. European Commission [EC] (2006) Directorate General for Education and Culture, Economy of Culture in Europe
8. European Commission [EC] (2011) Creative Europe (2014–2020) – a new framework for the cultural and creative sectors. Communication from the Commission to the European Parliament, the Council, the European Social and Economic Committee and the Committee of Regions, Brussels, Belgium
9. European Commission [EC] (2016) Boosting the competitiveness of the cultural and creative industries for growth and jobs. European Commission, Brussels
10. Flew, T. (2013). Creative industries and cities. In T. Flew (Ed.), Creative industries and urban development: Creative cities in the 21st century (pp. 1–14). Oxford: Routledge
11. Florida, R. (2002). The rise of the creative class. New York: Basic Books
12. Florida, R., Mellander, C., & King, K. (2015). The global creativity index 2015. Martin Prosperity Institute.
13. Hung, W.-L., Lee, Y.-J., & Huang, P.-S. (2014). Creative experiences, memorability and revisit intention in
14. Index, G. C. (2017). Martin Prosperity Institute. Pozyskano z http://martinprosperity. org/media/Global-Creativity-Index-2015. pdf.
15. Innocenti, Niccolò; Lazzeretti, Luciana (2019). Do the creative industries support growth and innovation in the wider economy? Industry relatedness and employment growth in Italy. Industry and Innovation, (), 1–22. doi:10.1080/13662716.2018.1561360

16. Jelinčić D. A. and Žuvela A. (2012), Facing the Challenge? Creative Tourism in Croatia pp 78 – 90, Journal of Tourism Consumption and practice, Special Issue on Creative Tourism, Volume 4 Number
17. Kloudová, J., & Chwaszcz, O. (2011). NEW WAY OF ANALYSIS OF CREATIVE CENTERS WITHIN EUROPE. Economics & Management, 16.
18. Long, P., & Morpeth, N.D. (Eds.). (2016). Tourism and the Creative Industries: Theories, policies and practice (1st ed.). Routledge. https://doi.org/10.4324/9781315735870
19. Marques, L. É. N. I. A., & Richards, G. (2014). Creative districts around the world. Creative Districts (2014th ed.). Breda: NHTV, Breda.
20. Novotny, D. (2015) Kreativna ekonomija: kako iskoristiti kapital ljudskog uma kao pokretača ekonomskog rasta u 21. stoljeću? Zagreb: T&MC Group
21. OECD (2014), Tourism and the Creative Economy, OECD Studies on Tourism, OECD Publishing, Paris, https://doi.org/10.1787/9789264207875-en.
22. Pine II, B. J., Gilmo, J. H. (1998). Welcome to the Experience Economy. Harvard Business Review, Available at: https://hbr.org/1998/07/welcome-to-the-experience-economy
23. Richards, G. (2002). From cultural tourism to creative tourism: European perspectives. Tourism, 50(3), 225-233.
24. Richards, G. (2005). Textile tourists in the European periphery: New markets for disadvantaged areas?. Tourism Review International, 8(4), 323-338.
25. Richards, G. (2011). Creativity and tourism. Annals of Tourism Research, 38(4), 1225–1253. doi:10.1016/j.annals.2011.07.008
26. Richards, G. (2013) "Creativity and tourism in the city", Current Issues in Tourism, 2013 (publication)
27. Richards, G. (2016). The challenge of creative tourism. Ethnologies, 38(1-2), 31-45.
28. Richards, G. (2019). Creative tourism: opportunities for smaller places?. Tourism & Management Studies, 15(1SI), 7-10.
29. Richards, G. (2020). Designing creative places: The role of creative tourism. Annals of tourism research, 85, 102922.
30. Richards, G. and Raymond, C. (2000) Creative tourism. ATLAS News no. 23, pp. 16-20. https://www.academia.edu/1785786/Creative_Tourism_-_Richards_and_Raymond_2000
31. Richards, G., Wilson, J. (2006). Developing creativity in tourist experiences: A solution to the serial reproduction of culture? Tourism Management (27), p. 1424.
32. Sandell, T., & Skarveli, L. (2016). Mapping exercise: How could creative industries foster innovation in tourism in the Northern Dimension area. Country Report±Finland. The Northern Dimension Partnership on Culture. Haettu, 28, 2018
33. Tan, S., Tan, S.-H., Luh, D.-B., & Kung, S.-F. (2015). Understanding tourist perspectives in creative tourism.
34. Tourism. Santa Fe.
35. UNCTAD and UNDP (2018). Creative Economy Outlook: Trends in international trade in creative industries. Geneva: UNCTAD
36. UNCTAD. (2008). The Creative Economy Report 2008. New York, NY: United Nations.
37. UNCTAD. (2010). The Creative Economy Report 2010. New York, NY: United Nations.
38. UNESCO (2006). Discussion Report of the Planning Meeting for 2006 International Conference on Creative
39. Waitt, G., & Gibson, C. (2014). Tourism and creative economies. In A. A. Lew, C. M. Hall, & A. M. Williams (Eds.), The Wiley Blackwell companion to tourism (pp. 230–239). Chichester: Wiley Blackwell.

40. WEF (World Economic Forum) (2019). Global Competitiveness Report 2019: How to end a lost decade of productivity growth, Geneva: World Economic Forum.
41. WEF (World Economic Forum) (2019). The travel & tourism competitiveness report 2019 Geneva: World Economic Forum.

FREQUENCY OF ERRORS IN THE LIST OF WORKS, SUPPLIES AND SERVICES IN TRANSPORT AND BUILDING ENGINEERING WORKS

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ABSTRACT

Errors in tender documentation are an unfortunately common, but undesirable phenomenon in public procurement that complicates the entire process. The errors can take different forms and have different consequences. This article aims to analyse and then compare the errors of two technologically distinct types of construction works from the perspective of the applicable Czech legislation. A total of 45 transport and 45 building engineering projects were analysed and assessed for the period from 2016 to 2020. The results show that the incidence of errors is relatively high, consisting especially in the absence of the bill of quantities, references to project documentation and failure to specify a pricing system. A comparison of transport and building engineering projects indicates that the implementation of building engineering projects carries a significantly higher risk. The findings presented in this article aim to highlight the most common errors in tender documents for public contracts and to raise awareness of the possibility on the part of the contracting authority to check the bill of quantities.

Keywords: *bill of costs, construction works, transport infrastructure, error, public procurement, tender documentation*

1. INTRODUCTION

The construction of transport and building engineering works is characterised by its complexity and the wide scope of the required documents. The preparation involves theinteraction of several participants, especially the investor, contractor, designer and suppliers of materials or equipment [1]. Good coordination of construction processes leads to the successful completion of the construction work and the achievement of the set objectives. Public contracting authorities (government departments, regional authorities and municipalities) spend considerable amounts of public money on the preparation and implementation of these projects. The main aim and interest of the investor are to minimise the risk and ensure that the project succeeds in terms of cost, time and quality [2]. From a life cycle cost (LCC) perspective, the preparation costs constitute an almost negligible part compared to the construction and operation costs. Despite this fact, building owners and investors often try to save money at the preparation stage, which necessarily affects future costs [3]. Therefore, it is important to involve experienced staff and possibly even future operators to ensure higher quality and more efficient use. Despite the possibility of using multi-criteria evaluation in tendering, many contracting authorities still limit their evaluation to the lowest bid price for the work.

They do so even though it is possible to set certain requirements for knowledge and references proving experience with similar construction works when selecting the designer. This experience can increase the likelihood of achieving better quality. This is one of the most commonly used non-price criteria [4]. As quality together with cost are the key criteria determining the success of a project, it is important to be aware of the possibility and extent of inaccuracies in the tender documentation. These errors in the tender documents are one of the main causes leading to potential variations in cost estimation [5].

1.1. Transport versus building engineering works

The difference between transport and building engineering works is indicated by the terms themselves. Transport structures include roads, railways and airfields. An engineering and geotechnical survey [6] is critical for the correct design of transport structures. The foundations are one of the most important elements of a transport structure and require good cooperation between the designer, geotechnical engineer and structural engineer. This is due to the type of construction itself, where the entire body of the transport structure is supported by the underlying bedrock. The transport structure itself is designed mainly for reliability, durability and safety [7]. However, the building of transport structures has a significant impact on the development of the whole country and, therefore, also on the construction of building engineering works [8]. Typically, office buildings and manufacturing plants are concentrated near highway exits. In the Czech context, building engineering works typically include single-family houses, schools, hospitals or swimming complexes. These buildings, besides the above-mentioned parameters of transport structures, are designed with regard to other important aspects such as energy efficiency (heating, cooling) [9]. The above indicates there are clear differences in the design process itself, the implementation technology, as well as the subsequent operation and maintenance. However, the two types of structures are closely linked. Every house needs some type of road and transnational transport networks (highways, railways) significantly affect land prices and development in a given area. In the case of public buildings, both types of construction projects are governed by the same Public Procurement Act and Implementing Decree No. 169/2016 Coll.

1.2. Definition of errors in the list of works, supplies and services

The quality of project documentation is one of the important factors influencing the quality of the list of works, supplies and services. Ideally, the documentation should be submitted without errors at a quality that allows implementation of the project (selection of the contractor) and include all lists, specifications, drawings and reports, which also correspond to each other. The less perfect the project, the more effort it takes to draw up the bill of quantities and the higher the subsequent error rate. This paper focuses only on errors in the list of works, supplies and services as defined by Decree 169/2016 Coll. [10] and Act No. 134/2016 Coll. [11] on public procurement. The main objective of this article is to contribute to the current body of knowledge in the area under study and to explore the issues related to the compilation of the list of works, supplies and services in construction projects. Furthermore, this paper aims to compare the relative error frequencies on a selected sample of already completed building and transport engineering works.

2. METHODOLOGY

Each project implemented by an ordinary, public or sectoral contracting authority must comply with certain legislative conditions. This legislation includes in particular Act No. 134/2016 Coll., on public procurement [10] (the Public Procurement Act), and implementing Decree No. 169/2016 Coll., on the specification of the scope of documentation in public works contracts and of the list of works, supplies and services with a bill of quantities [11].

While the scope and content are subject to the applicable legislation, there may be some errors or deviations from this implementing decree. As mentioned in Chapter 1, this is due to the very complex and extensive proceedings and the procedure for selecting the contractor. The risk of errors increases with the lack of experience and knowledge of the technical project documents issued by the contracting authority. For the analysis and subsequent comparison of different types of structures, 2 different data bases were chosen. The data were taken from the diploma thesis [12,13]. The specific difference lies only in the type of construction work (transport versus building engineering). The database of the examined contracts covers the period from the date when the Decree entered into force (1 October 2016) until the end of 2020. Several other parameters were defined as additional constraints for the analysis and subsequent comparison:

- public accessibility;
- construction works;
- building engineering works, transport engineering works;
- expected value publicly available;
- project documentation publicly available;
- list of works, supplies and services publicly available.

Contracts that did not meet these parameters were automatically excluded. The data used for the analysis came exclusively from contracts procured using the DBB (design-bid-build) method, i.e., measured contracts that require a list of works in relation to the tender documentation in the extent of the implementation documentation [11] pursuant to Decree No. 169/2016 Coll.

2.1. Identification of errors and their significance

In each list of works in the individual published contracts, compliance with implementing Decree No. 169/2016 Coll. was examined. The absolute frequencies of errors in individual sheets and in the whole contracts were studied. These frequencies were recorded and subsequently evaluated using a spreadsheet (Microsoft Excel). A period-by-period breakdown was also carried out in order to assess any development over time.

2.2. Parameters evaluated according to Decree No. 169/2016 Coll. for the list of works, supplies and services

The parameters were chosen according to the previously mentioned implementing Decree No.169/2016 Coll. In case of an error according to the relevant section, the error was recorded and subsequently evaluated. Sections evaluated:

- Section 4 – Budget structure corresponds to the project structure
- Section 5 – List items unambiguously define the contents of the item, but the business name or other limitations according to Act No. 134/2016 Coll. are not indicated
- Section 6 – The item includes:
- Section 6 (a) – Serial number
- Section 6 (c) – Item code
- Section 6 (d) – Item description
- Section 6 (e) – Unit of measurement
- Section 6 (f) – Quantity
- Section 6 (g) – Bill of quantities with respect to the indicated amount
- Section 7 – The bill of quantities contains an unambiguous reference to the relevant part of the documentation and a verified calculation.

Bill of quantities which is identical for a number of items, can be indicated by simple reference to the preceding item/bill of quantities

- Section 11 – Price system is indicated and freely accessible
- Section 12 – An electronic list of works, supplies and services is in an open format for use in various budgeting software tools. Consistent appearance of the list of works, supplies and services across the entire project.

3. RESULTS AND DISCUSSION

3.1. Description of the input database

For this study, 45 public contracts for building engineering works and 45 public contracts for transport infrastructure works were collected. For convenience, the total number of sheets and estimated values are shown in Table Table 1 below.

Description	Amount/Value		Unit of measurement
	Building engineering works	Transport engineering works	
Number of contracts	45	45	Set
Number of individual lists' sheets	224	217	Amount/Value
Average number of a list's sheets per contract	5	5	Set
Average contract price	33,067,427.1	9,784,506	CZK excl. VAT
Maximum contract price	106,000,000.0	65,562,000	CZK excl. VAT
Minimum contract price	5,213,310.1	458,444	CZK excl. VAT
Total price of all contracts analysed	1,488,034,221.1	440,302,770	CZK excl. VAT

Table 1: overview of the selected database of the construction works examined (source: author)

3.2. Comparison of error frequency in transport and building engineering structures

Following the procedure described in Section 0, an error frequency analysis was carried out. Looking at Table **Error! Reference source not found.**, some differences can be observed in the absolute frequency of errors in the contracts examined.

Description	Amount/Value		Unit of measurement
	Building engineering works	Transport engineering works	
Number of contracts	45	45	Item
Number of individual lists' sheets	224	217	Item
Number of list sheets without errors	24	29	Item
Number of list sheets with errors	200	188	Item
Number of contracts without errors	4	4	Item
Number of contracts with errors	41	41	Item
Average number of errors per list sheet	3	2	Item
Average number of errors per contract	14	8	Item
Expected value of error-free contracts	234,278,978.8	21,380,000	CZK excl. VAT
Expected value of contracts with errors	1,253,755,242.3	440,302,770	CZK excl. VAT

Table 2: comparison of the absolute prevalence of errors in building and transport engineering projects (source: author)

However, these differences are very small and have no impact on the overall analysis and results. The minor differences are due to the different number of sheets of the lists of supplies and services in the different contracts. Even with the same number of contracts analysed, it is not possible to maintain uniformity in the number of sheets examined. In the current case, it can be noted that the number of contracts that have some errors in the list itself is approximately the same. By looking at the table below, the proportions of errors of individual sheets and sub-contracts can be seen.

Description	**Building engineering works**	**Transport engineering works**
Number of list sheets without errors	24	29
Number of list sheets with errors	200	188
Proportion of erroneous sheets in the total number of analysed list of works, supplies and services	88%	85%
Number of contracts without errors	4	4
Number of contracts with errors	41	41
Proportion of erroneous contracts in the total number of contracts	90%	90%

Table 3: the proportion of errors in transport and building engineering projects (source: author)

90% of all evaluated contracts contained some errors. Conversely, only one out of ten contracts analysed did not contain any errors. This result is even more than alarming in the context of the overall expected value of the public contracts, i.e. contracts which are part of public procurement involving taxpayers' money or EU subsidies. Table Table 2 indicates the expected value of the contracts that involve errors:

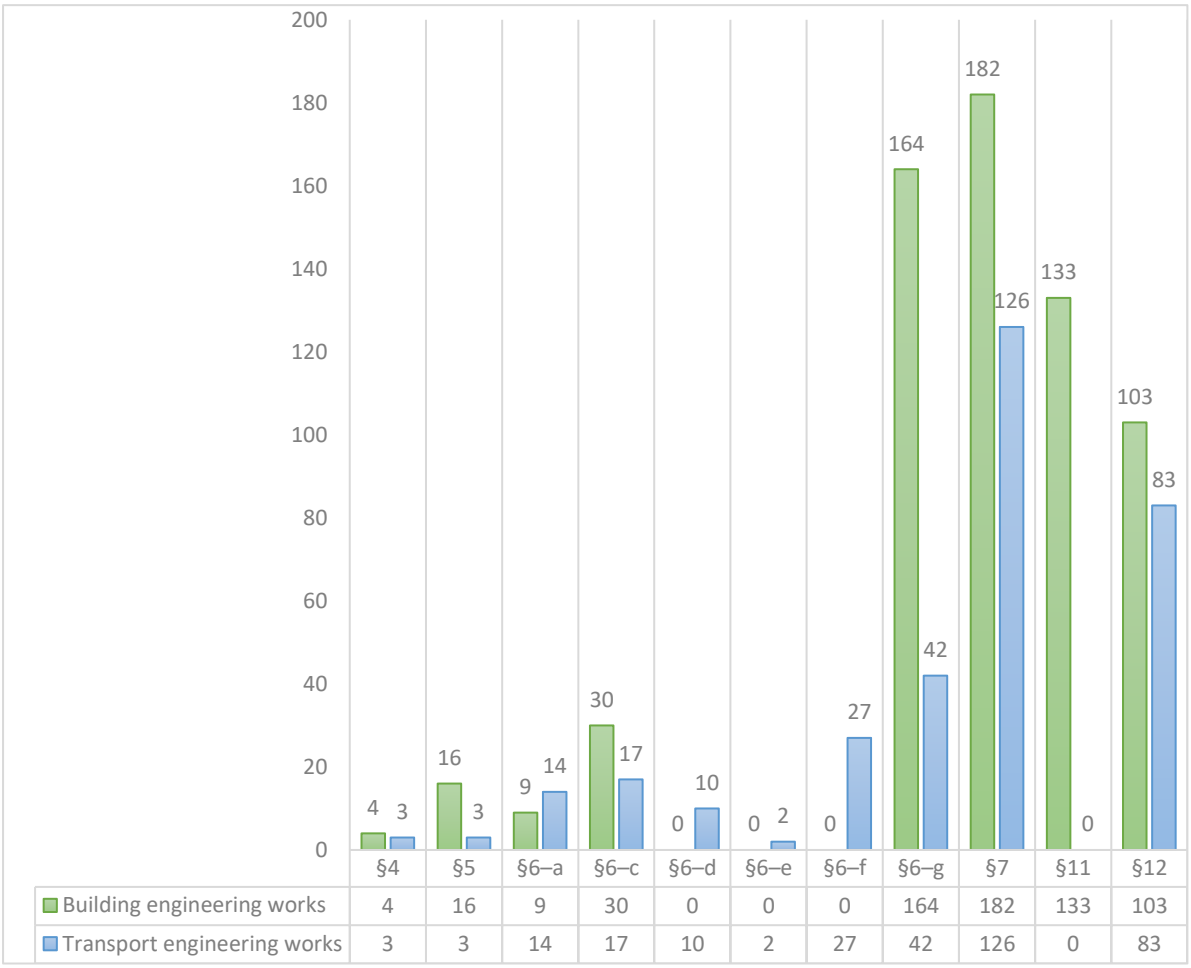
1,253,755,242.3 + 440,302,770.0 = CZK 1,694,058,012.3 (excluding VAT).

In round numbers, the estimated value of these contracts is nearly **CZK 1.7 billion** (excl. VAT). Contracts with an estimated value of only **CZK 0.26 billion (excl. VAT)** did not contain any errors within the scope of tender documentation pursuant to Decree No. 169/2016 Coll.

3.3. Frequencies of errors in the lists of works, supplies and services

According to the procedure described in section 0, the sheets were analysed according to the selected sections of the Decree. Graph Graph 1 shows the total number of all individual errors according to the aforementioned sections of the Decree. For transport engineering works, the most common errors consisted in the absence of references to documentation, consistency and openness of the list, and the bill of quantities itself (i.e., Sections 6(f), 6(g), 7 and 12). Serial numbers and item codes were also missing.

Graph following on the next page

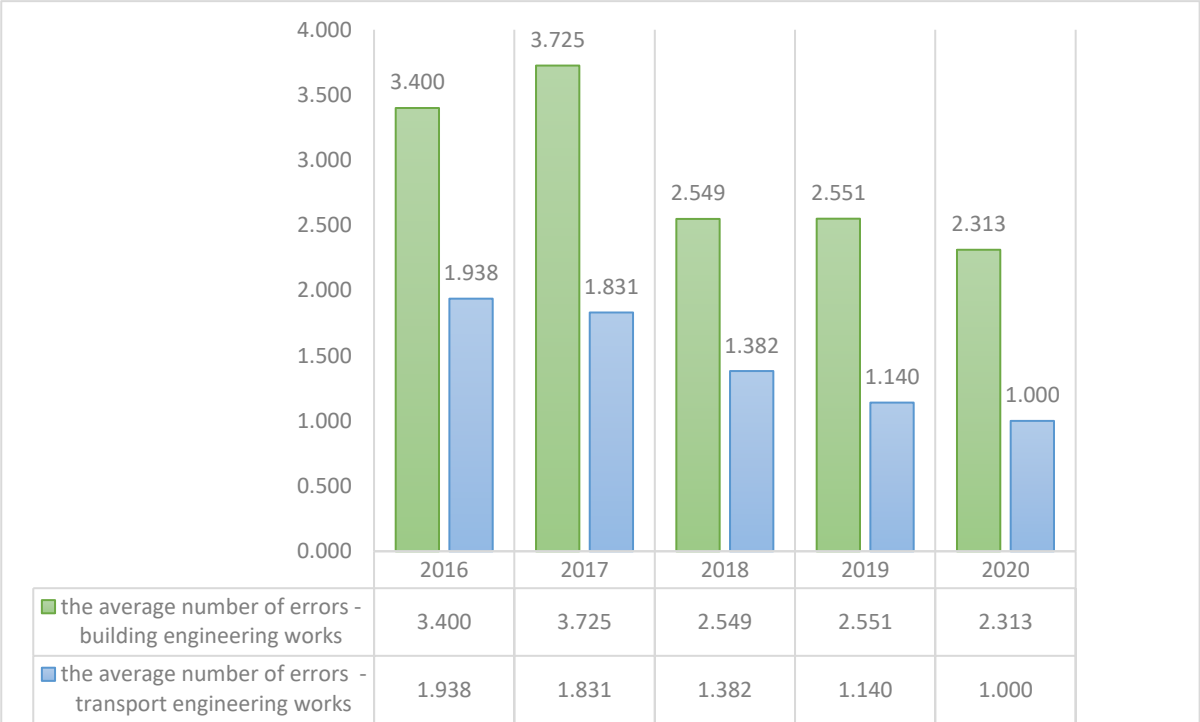


Graph 1:Total number of lists containing errors according to individual requirements of the implementing decree – transport engineering and building engineering works (source: author)

The major difference in the frequency of errors in building engineering works compared to transport engineering works was the lack of a pricing system and a significantly higher incidence of a missing bill of quantities. In contrast, there was zero incidence of missing item codes or quantities. At the intersection of the sets of frequencies, the highest incidence of errors was recorded in the missing references to the project documents (Section 7) and the consistency and openness of the schedule of the list of works, supplies and services (Section 12). The different results are probably due to the very different nature of the construction projects analysed. Very different and complex building engineering projects were analysed, including buildings such as a kindergarten, an apartment building and the reconstruction of a community centre. The transport engineering projects analysed included mainly roads or bike paths. Many designers of transport structures submit a bill of materials alongside other documentation. Therefore, it is much easier for budgeters of transport infrastructure to prepare the bill of quantities itself. This significant difference is clearly visible in Chart Graph 1 (Section 6(g)).

3.4. Analysis of error rates over the years

Next, an analysis of the incidence rates in the different periods under review was carried out. This is the average number of errors for the period 2016-2020. The results are shown in Graph Graph 2. This simplified statistic shows us the average number of errors per sheet of the list of works examined. Therefore, it is the proportion of the number of sheets to the number of errors in each period.



Graph 2: the average number of errors over the years (source: author)

For both types of construction, a decreasing trend is discernible even despite the relatively small sample of public contracts examined. Despite the positive trend, this is still a harmful phenomenon. In 2020, there was on average 1 error per sheet of the list in transport works and 2.3 errors in building engineering projects. The decrease in error rates can be attributed to the improvement of knowledge and experience over a period of several years. However, there is still much room for learning, feedback or the introduction of greater control on the part of contracting authorities. The actual error rates and the evolution of errors over time are different for transport and building engineering works. Looking at the analysis over time, it is possible to conclude that the average number of errors is about half. However, taking into regard the total number of sheets that contain an error or entire contracts, the proportion is nearly the same. This is due to the fact that individual contracts have different numbers of lists analysed and the lists themselves contained different numbers of errors. In terms of the analysis of the erroneousness for contracts and individual lists, a sheet was considered erroneous if it contained at least one error. It would be interesting to establish a parameter that would govern the evaluation of the erroneousness of the individual contracts and lists. For example, a sheet would be considered erroneous if there were 3 or more errors. A more appropriate option would be to determine the expected severity of each error in terms of the impact on the project's implementation. Such a determination would be carried out on the basis of risk analysis and scaling according to a suitably chosen methodology.

4. CONCLUSION

This paper has analysed two selected samples of building and transport engineering works in terms of the basic legislative requirements for the form of the list of works, supplies and services and their impact on the actual implementation. Using a sample of 45 transport and 45 building engineering works procured in the period from 2016 to 2020, it was shown that the most common errors related to the lack of a list of works, references to project documentation and specification of the pricing system used. All of these errors have a serious impact on invoicing and carry significant risk in terms of the construction project's success.

The frequencies were different between building and transport engineering projects in terms of time and frequency analysis. The overall incidence was about half as high in transport construction. However, when evaluating the contracts as a whole, the proportions of contracts that did not contain an error were nearly equal. This is due to the different number of sheets and individual errors on the sheets in each contract. On the basis of this finding, it can be concluded that the implementation of building engineering works carries a significantly higher risk compared to transport engineering works in terms of the scope of the tender documentation. Finally, it is worth mentioning that there is a lot of room for improvement, in particular with regard to the errors concerning the missing bill of quantities, references to project documentation and the indication of the pricing system (Section 6(g), Section 7 and Section 11) according to implementing Decree No. 169/2016 Coll. These errors can be discovered using a very simple checklist/table, which is presented in paragraph 0. This kind of check should certainly be carried out by any public contracting authority, but it will certainly find its application in the private sector as well.

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LITERATURE:

1. E. Radziszewska-Zielina and B. Szewczyk, "Examples of actions that improve partnering cooperation among the participants of construction projects," IOP Conf. Ser. Mater. Sci. Eng., vol. 251, p. 012051, Oct. 2017, doi: 10.1088/1757-899X/251/1/012051.
2. J. Korytárová and V. Hromádka, "Risk Assessment of Large-Scale Infrastructure Projects—Assumptions and Context," Appl. Sci., vol. 11, no. 1, p. 109, Dec. 2020, doi: 10.3390/app11010109.
3. R. S. Heralova, "Life Cycle Costing as an Important Contribution to Feasibility Study in Construction Projects," Procedia Eng., vol. 196, pp. 565–570, 2017, doi: 10.1016/j.proeng.2017.08.031.
4. R. Kozik, "The Process of the Tender Evaluation in Public Procurement for Implementation of Design Documentation," IOP Conf. Ser. Earth Environ. Sci., vol. 222, p. 012019, Jan. 2019, doi: 10.1088/1755-1315/222/1/012019.
5. Akintoye and E. Fitzgerald, "A survey of current cost estimating practices in the UK," Constr. Manag. Econ., vol. 18, no. 2, pp. 161–172, Mar. 2000, doi: 10.1080/014461900370799.
6. TOMAŠTÍK, Zdeněk. [online]. Univerzita Pardubice, 2002 [cit. 2021-9-25]. ISSN 1211-6610.
7. LANTUKH-LYASHCHENKO, Albert, Artur ONISHCHENKO a Oleksandr DAVYDENKO. Problem of the degradation criteria for transportation construction elements. E3S web of conferences [online]. EDP Sciences, 2020, 164, 3014. ISSN 2267-1242. Dostupné z: doi:10.1051/e3sconf/202016403014
8. NEZU, Yoshiki a Satoshi FUJII. Construction of simulation model masrac for impact analysis of the macro economy by transportation infrastructure investment. Studies in Science and Technology [online]. Society for Science and Technology, 2016, 5(2), 185-195 [cit. 2021-9-25]. ISSN 2186-4942. Dostupné z: doi:10.11425/sst.5.185
9. DAI, Xuezhi, Yong WU, Yanqiang DI a Qiaoyan LI. Government regulation and associated innovations in building energy-efficiency supervisory systems for large-scale public buildings in a market economy. Energy policy [online]. Elsevier, 2009, 37(6), 2073-2078. ISSN 0301-4215. Dostupné z: doi:10.1016/j.enpol.2009.02.008
10. Act No. 134/2016 Coll. on Public Procurement, Czech Republic

11. Decree No. 169/2016 Coll., decree on determining the scope of documentation of a public contract for construction works and an inventory of construction works, supplies and services with a statement of acreage.
12. MIKULÍK, Michal. Analýza soupisů prací, dodávek a služeb u veřejných zakázek [online]. Brno [cit. 2021-9-9]. Dostupné z: http://hdl.handle.net/11012/196184. Diplomová práce. Vysoké učení technické v Brně. Fakulta stavební. Ústav stavební ekonomiky a řízení. Vedoucí práce Petr Aigel.
13. PETLÁKOVÁ, Lenka. Analýza soupisů prací, dodávek a služeb u veřejných zakázek [online]. Brno [cit. 2021-9-9]. Dostupné z: http://hdl.handle.net/11012/196187. Diplomová práce. Vysoké učení technické v Brně. Fakulta stavební. Ústav stavební ekonomiky a řízení. Vedoucí práce Petr Aigel.

THE EVOLUTION OF SUPPLY CHAIN MANAGEMENT - FROM TRADITIONAL TO MODERN WITH THE SUPPORT OF TECHNOLOGIES

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ABSTRACT

Business digitization has been discussed for years, and the recent Coronavirus crisis seems to be forcing companies into making long-postponed decisions. The new paradigm reveals the true potential of companies, and whether we like it or not, we will have to accept that businesses can work differently. Changes are already visible among both consumers and businesses. Some of these changes are direct, short-term responses to the crisis, and will occur regularly throughout the crisis. However, some effects of these changes will persist in the long run, creating a digital shift and underpinning events that will shape business and how we do business for decades to come. Supply Chain Management software solutions are instrumental for any business seeking to manage supplier relationships, increase efficiency across the supply chain, and control business processes from the aggregation of raw materials to the supply of a finished product. The solutions developed using the Internet of Things provide for the integration of information technology, using both hardware and software components for data storage, retrieval and processing, and electronic systems to facilitate communication between objects and other objects or people.

Keywords: *Cloud Computing, Internet of Things, Supply Chain Management*

1. INTRODUCTION

Global economic developments are leading to increased competitiveness between organizations, which can be supported by the creation of a network of organizations, known as a supply chain, that collaborate and coordinate their activities to deliver a product to the market. In the context of the increasing number of companies affiliated to supply chains in today's business environment and the benefits derived from these associations, Supply Chain Management has evidently become an important component of company management systems, contributing both to cost reduction and to maintaining and improving the quality of the delivered goods and services. In order to provide the best products to customers, the in-house business functions, departments and processes of a company are integrated across company boundaries, making it possible to connect with other companies serving the same purpose, making collective efforts to acquire and transform raw materials into finished products and then deliver them to customers. Given the ever-changing environment and technological advances, individual entities can no longer compete as such, but rather as active members of a wider supply chain, entailing a network of multiple businesses and relationships, and exposure to a multitude of risks on all levels. Expansion across wide geographical areas, increasing customer requirements for product customization, pricing and service levels, together with the rapid changes in technology and the ongoing introduction of new products on the market are just some of the factors directly affecting supply chains. In order to survive in such a complex environment, to respond quickly to changes in the business environment and collaborate effectively, companies need to have a high level of visibility across the supply chain.

This can be achieved via Internet of Things technology, which has been and is a key enabler for efficient supply chain management in decision making and in improving performances. Given the circumstances outlined above, this article seeks to highlight the main stages in the evolution of Supply Chain Management. Moreover, using statistical tools, we aim to determine the factors influencing the adoption of Internet of Things devices and technologies in Supply Chain Management.

2. AN ANALYTIC VIEW ON THE EVOLUTION OF SUPPLY CHAIN MANAGEMENT

Fifty years ago, any good produced by a company was bought and consumed immediately. Change in habits and technologies occurred at a slow pace, allowing any product, in almost any quantity, to be sold whether sooner or later. With the passage of time, access to information accelerated, leading to the market globalization phenomenon and the opening of borders, suggesting that the world suddenly became smaller. As a result, a growing number of companies have emerged that operate globally and compete at a global level, thus generating a radical change in companies driven by their need to survive. Products and technological trends are constantly and rapidly changing, leading to evolutions in terms of consumer habits. These changes impact companies' planning processes, and therefore require responsive, innovative and supportive capabilities to respond to market changes. In brief, the evolution of *supply chain management* over the course of time produced the following changes (Robinson, 2015):

- *The 1970s* – Companies focused on making internal changes, primarily aimed at reducing inventory levels and distribution costs, and secondarily at reducing downtime at production sites, supplier lead times and safety stocks. Moreover, other pressures such as the explosive rise in fuel prices and interest rates by more than 20% have prompted companies to focus on transportation and inventory management.
- *The 1980s* – This decade has brought three major changes in SCM, namely (1) manufacturers' focus on supply chain cost restructuring in order to reduce operating costs and operating assets; (2) the shift from cost reduction to improved customer service; (3) internal integration of logistics within companies.
- *The 1990s* – The focus continues to be on manufacturers, with companies entering into new agreements with existing partners and rationalizing current distribution channels. Companies are starting to understand the importance of external partnerships to the detriment of focusing on internal cooperation and communication. This decade contributed to the emergence of the logistics integration trend, as statistics show that 60% of companies nowadays have made significant progress in integrating logistics systems (Rutner *et al.*, 2013).
- *The 2000s* – There is an international and national strategic growth in supply chains, with social, environmental and security issues playing an important role in supply chain decision-making.
- *The 2010s* – Changes in the business environment are actively contributing to the development of supply chain networks. Based on globalization and specialization, the term SCM 2.0 has been coined to describe both changes in supply chains and the evolution of the processes, methods and tools used to manage the new generations of supply chains and the proliferation of multinational companies (Sam, 2016).

Understanding the past and observing the present allow an extrapolation of what supply chain management might look like in the future. Outsourcing together with globalization and free trade contribute to a growing interest in Supply Chain Management. According to a study by Selko (2016), by 2020, 80% of the world's goods will be produced in a country other than the one where they are consumed, compared to 20% today.

An intensive endeavor shall be carried out in terms of the movement and consumption of goods, all of which will require a better management of the associated supply chain processes. If we look back at the primary supply chain management methods in the past, we will see that the traditional model operated based on a "push" strategy, i.e. the manufacturer produced the goods and the latter moved along the supply chain without receiving responses, feedback or information on the requirements or specifications of the supply chain. In this process, there are often gaps between supply and demand, which led either to specific shortages or to the production of large quantities of finished goods. In the new, modern supply chain management model, companies have improved the level of integration of the activities performed and redefined its structures to expand the portfolio of customer services. The concept of modern supply chain management has become a tool for value creation and streamlining of the supply chain, helping meet the customers' needs. Nowadays, new supply chain management models are based on the "pull" strategy, which relies on precise customer requirements and appropriate methods of obtaining feedback on interaction with the products/services offered. The differences in the market process translate into what SCM actually is. To clarify the lack of heterogeneity of the two established models, we acknowledge the need for a synoptic perspective, as seen in *Table 1* below.

Traditional model	Modern model
Inadequate planning that creates a mismatch between logistics channel partners. Planning on individual performance without considering intermediary partners. Lack of long-term growth plan and focus. It is underpinned by old models defined by low integration levels. Lacks vision and precise mission statements.	The strong network along the supply chain leads to cost savings and high profitability. Existence of a long-term growth plan and strategies that are aligned with the vision and mission of the company. Strong connection between suppliers and purchasing managers. Constant monitoring of existing practices carried out at regular intervals in order to increase performance and efficiency. Reduction of inventory shrinkage; Integration of individual systems.

Table 1: Traditional model vs. Modern model

Oracle experts have summarized a number of directions for changing the way supply chain development works, of which we believe the following are the most important (Pavao, 2017):

- Technological differentiation is truly important to retailers when unique and specialized knowledge about customers and merchandise is gained from data derived from supply chain operations, planning, merchandising, trade and other large-scale systems;
- Gaps have occurred at the front end of the product lifecycle, in the idea phase, so product managers and company leaders decide which product ideas need to be selected for funding;
- Oracle Supply Chain Management (SCM) Cloud offers a wide range of innovative applications that enable companies to modernize their supply chain processes. The addition of LogFire will complement the logistics functionality of the Oracle SCM Cloud system by adding cloud-based warehouse management capabilities;
- Clients can add sensors to any object, which can be a component of systematic interaction. As they increase their digital footprint, they enable the use of smart business processes, adapting and reacting in real time.

Supply chains are under ongoing pressure to keep up with all the changes: from the emergence of a new generation of consumers to rapid technological advances and the digitization of processes. Companies therefore have to adapt quickly to the new context.

3. METHODOLOGY

This research aims to identify the evolution of supply chain management, from traditional to modern by means of technologies, starting from its importance in the context of an ever-changing society. From a methodological perspective, the research objective will be achieved using both qualitative and quantitative methods. As qualitative method, the study proposes a review of the literature on the analyzed subject. Relevant opinions in the field have been studied in this respect. As quantitative method, a logistic regression model was chosen to identify the main factors influencing the adoption of Internet of Things devices and technologies in Supply Chain Management. Data collection was carried out on 112 Romanian companies. Considering the potential limitations, please note that this endeavor is part of a broad research process which aims to integrate SCM in the activity of several sectors of activity.

4. USING INTERNET OF THINGS ON SUPPLY CHAIN MANAGEMENT

Using the Internet of Things in Supply Chain Management seeks to reduce the time between data collection and decision making by enabling supply chains to react in real time to changes in the environment, to manage their operations remotely, to better coordinate partners and to provide accurate information for effective decision making so as to help improve performance. The ever-changing environment nowadays makes the decision-making process increasingly complex and difficult. Although decision-making is a dynamic and evolving process, there are some common elements that are characteristic of every enterprise and that entail some basic steps. Managers make decisions in a wide range of situations; the types of decisions vary function of the manager's level in the organization and the nature of their job. The most important element in making a decision is one's own experience, but such experience must be based on actual facts and data to dispel potential naivety. Data in itself is no guarantee of accurate, quality and timely information. Proper data collection and processing does not always determine the quality of the decision, as this depends on a number of factors, both organizational (company size, financial resources and degree of centralization), inter-organizational (based on trust and market orientation), and technological (relating to the advantage offered by a new product, the rate of investment and the time to achieve the rate of return on investment). In order to identify the main factors influencing the adoption of Internet of Things devices and technologies in Supply Chain Management, statistical tools were used and a logistic regression model was developed. In order to achieve the goal, after the discussions with experts in the field and reviewing the Fuzzy graphical surfaces, we arrived at a series of hypotheses based on secondary variables. The observed phenomenon relates to the adoption of the Internet of Things aimed at improving supply chain management performance. Therefore, the proposed hypotheses are:

- *H1. There is a significant relationship between company size and the adoption of Internet of Things devices and technologies.*
- *H2. There is a significant relationship between the financial resources of the company (net revenue in the previous year) and the adoption of Internet of Things devices and technologies.*
- *H3. There is a significant relationship between the degree of centralization within the company and the adoption of Internet of Things devices and technologies*
- *H4. There is a significant relationship between the trust among the members of a supply chain and the adoption of Internet of Things devices and technologies.*

- *H5. There is a significant relationship between the inter-organizational market orientation and the adoption of Internet of Things devices and technologies.*
- *H6. There is a significant relationship between the advantage offered by a new product and the adoption of Internet of Things devices and technologies.*
- *H7. There is a significant relationship between the estimated rate of return on investment sought by the company and the adoption of Internet of Things devices and technologies.*
- *H8. There is a significant relationship between the time lapsed until achieving the rate of return on investment sought by the company and the adoption of Internet of Things devices and technologies.*

To test the research hypotheses, we used a *logistic regression model* that models the relation between independent variables ($x_1, x_2, x_{3\dots x_n}$) and a dichotomous dependent variable, taking the values 1 (success) and 0 (failure), in order to obtain data regarding the chances of an organization to adopt Internet of Things devices and technologies. This analysis is consistent with previous studies conducted in order to examine the factors that can influence the innovation and adoption of technology in an organization, at an individual or collective level in the case of companies that are members of a supply chain (Daugherty *et al.*, 1995), (Lassar *et al.*, 2005). The adoption of Internet of Things devices and technologies was reduced for the explanatory variables: *size, financial resources, centralization, inter-organizational trust, inter-organizational market orientation, advantage offered by a new product, rate of return on investment, time lapsed until achieving the rate of return on investment.*

The theoretical model can be defined as follows:

$$\gamma = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$$

Since the concept of regression provides estimates of a variable in relation to the values of other variables, we have chosen to use the concept of logistic regression in our research to estimate the degree of adoption of specific Internet of Things devices and technologies in supply chain management, function of the organizational, inter-organizational and technological factors specific to supply chain enterprises, as described in the previous chapters. Thus, for the *independent variables*: size, financial resources, rate of return on investment, time lapsed until achieving the rate of return on investment, binary conversions were performed to record the transformations undergone for the fulfilment of a specific condition, using the value 1 for those present and 0 for those absent. Instead of working with probabilities (which can lie between 0 and 1), logistic regression works with the natural logarithm of the odds, which can take a negative or positive value. Previous research based on the connection between innovation, the use of information technology and Supply Chain Management highlights that innovative enterprises tend to implement more innovations when resources are available, giving them an important competitive advantage. Enterprises whose values include innovation will be more open to change and ready to act when new technology becomes available. As innovative organizations have more experience in adopting and implementing new technologies, they are more likely to adopt new technologies than less innovative organizations (Ghobakhloo *et al.*, 2011), (Deshpande *et al.*, 1993), (McAfee et. al., 2002), (Neeley, 2006). Small and medium-sized enterprises were found to be more innovative, having greater flexibility and being able to adopt new technologies faster (Patterson *et al.*, 2013). In our study we will target small and medium-sized companies in terms of size, defining the odds ratio for the variable *Size* based on the number of employees (1 if the number of employees<250 and 0 if the number of employees≥250), and for the variable *Financial resources* based on net profit (1 if net profit<100,000 and 0 if net profit≥100,000).

In terms of the return on investment (ROI), the aim was to obtain a positive percentage at an average rate up to 5% (1 if the estimated ROI is higher than 5% and 0 if it is lower than 5%). Aiming to achieve the return on investment in the shortest time possible, we will track the values obtained up to one year. Thus, if the ROI time is up to one year, we assign the value 1, and if it is up to 5 years, we assign the value 0. To obtain the specific scores for the *independent variables*: centralization, inter-organizational trust, inter-organizational market orientation and advantage offered by a new product, the arithmetic mean of the items for each variable was calculated. The *dependent variable* is found in the database under the name *IoT Adoption*, it takes the value 1 if IoT devices and technologies have been adopted and 0 if they have not been adopted. The results obtained using the IBM SPSS 20 software are presented below. In the first part of the analysis (Block 0: Beginning Block) information is presented about the dependent variable, obtaining a first table (Table 2) that considers general information such as the number of valid observations, invalid observations and sample size.

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	112	100.0
	Missing Cases	0	.0
	Total	112	100.0
Unselected Cases		0	.0
Total		112	100.0

a. If weight is in effect, see classification table for the total number of cases.

Table 2: General information

The dependent variable *IoT Adoption* is re-encoded considering the reference category, where *No* = 0 and *Yes* = 1.

The first block of information refers to the simple model only using the constant term, having a different structure depending on the variables selection method (***Error! Reference source not found.****3*).

Classification Table[a,b]

Observed			Predicted		
			Adoptare IoT		Percentage Correct
			Nu	Da	
Step 0	Adoptare IoT	Nu	0	27	.0
		Da	0	85	100.0
	Overall Percentage				75.9

a. Constant is included in the model.

b. The cut value is .500

Table 3: Classification table

The classification table is constructed based on the predicted classification probability, so in the first phase we note that 85 companies refused to adopt Internet of Things devices and technologies, i.e. 75.9% of the sample, while 27 companies adopted devices and technologies specific of the Internet of Things.

The *table 4*, presents the constant before conducting the analysis, therefore we can see that the Wald statistics used to estimate parameters indicates that these coefficients are significant (0.000).

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.147	.221	26.950	1	.000	3.148

Table 4: Estimation of parameters

Although independent variables have not yet been included in the analysis, *Table 5* provides information on the effect of each variable. Thus, the variables Size, FinancialResources, NewProductAdvantage show a significant effect, while the variables Centralization, Trust, Orientation, EstimatedROI and Time_ROI do not have a significant effect.

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Dimensiune	24.820	1	.000
		ResurseFinanciare	25.788	1	.000
		Centralizare	2.539	1	.111
		Incredere	.820	1	.365
		Orientare	1.037	1	.308
		AvantajProdusNou	15.151	1	.000
		ROIEstimat	2.342	1	.126
		Timp_ROI	.160	1	.689
	Overall Statistics		44.356	8	.000

Table 5: The effect of independent variables

The second part of the analysis (Block 1: Method = Enter) shows the final results. The Enter process reveals that the 8 independent variables were entered into the analysis together. Rejection of the null hypothesis and acceptance of the alternative hypothesis can be achieved by comparing the results obtained in step 1 versus step 0 of the initial Chi-square test (χ^2) and the likelihood ratio (2LL), the results being highlighted in *Table 6*.

		Chi-square	df	Sig.
Step 1	Step	59.020	8	.000
	Block	59.020	8	.000
	Model	59.020	8	.000

Table 6: Omnibus test results for the regression coefficients

The result obtained from the Hosmer & Lemenshow test highlights the split at the decile level, based on the estimated probabilities, applying the χ^2 test on the observed frequencies. Thus, p-values = 0.000 are calculated based on the χ^2 distribution with 8 degrees of freedom, indicating that the logistic model is statistically valid. Based on the Cocs&Snell E Aquare and Nagelkerke R Square indicators, the results recorded in *Table 7* show how much of the variance of the dependent variable is explained by the combination of independent variables.

According to the first indicator, the 8 independent variables (organization size, financial resources, degree of centralization, inter-organizational trust, inter-organizational market orientation, the advantage offered by a new product, the rate of return on investment and the time lapsed until achieving the rate of return on investment) explain 41% of the variance of the dependent variable defined by the adoption of Internet of Things devices and technologies.

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	64.697[a]	.410	.613

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Table 7: Results of the regression model

According to the data obtained in *Table 8*, 63% of companies have not adopted Internet of Things devices and equipment, and these have been correctly classified by the model; on the other hand, 94.1% of such adopters have been correctly classified. This means that if 86.6% of the cases were correctly classified, compared to 75.9%, then the independent variables contributed 10.7% to the correct classification of the population.

Classification Table[a]

Observed			Predicted		
			Adoptare IoT		Percentage Correct
			Nu	Da	
Step 1	Adoptare IoT	Nu	17	10	63.0
		Da	5	80	94.1
	Overall Percentage				86.6

a. The cut value is .500

Table 8: Classification table

According to *table 9***Error! Reference source not found.**, we can note that the variables Size (B = 3,098, sig = 0,004), FinancialResources (B = 5,191, sig = 0,000), NewProductAdvantage (B = 1,965, sig = 0,014), EstimatedROI (B = 5,409, sig = 0,002) continue to have a significant effect (sig<0,05), being important predictors for the adoption of Internet of Things devices and technologies, thus supporting hypotheses H1, H2, H6, H7.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Dimensiune	3.098	1.088	8.102	1	.004	22.159	2.624	187.093
	ResurseFinanciare	5.191	1.404	13.666	1	.000	179.668	11.460	2816.754
	Centralizare	-.694	.673	1.063	1	.303	.500	.133	1.869
	Incredere	-.342	.508	.451	1	.502	.711	.262	1.925
	Orientare	1.110	.608	3.328	1	.068	3.033	.921	9.992
	AvantajProdusNou	1.965	.799	6.051	1	.014	7.138	1.491	34.170
	ROIEstimat	5.409	1.724	9.844	1	.002	223.511	7.616	6559.307
	Timp_ROI	-.576	.982	.344	1	.557	.562	.082	3.852
	Constant	-12.739	4.447	8.205	1	.004	.000		

a. Variable(s) entered on step 1: Dimensiune, ResurseFinanciare, Centralizare, Incredere, Orientare, AvantajProdusNou, ROIEstimat, Timp_ROI.

Table 9: The combined effect of independent variables

Although support was found for two of the hypotheses related to forecasting organizational factors, the degree of centralization did not appear to be significant (B = -0.694, sig = 0.303), contributing to the rejection of hypothesis H3. Inter-organizational factors do not have a notable influence for Internet of Things adoption, thus rejecting hypotheses H4 and H5, as no significant effect was registered in terms of the independent variables Trust (B = -.342, sig = 0.502), Orientation (B = 1.110, sig = 0.068), even though the Inter-organizational Orientation factor is close to having statistical significance. The results do not support hypothesis H8 either, as the time for investment payback is not a significant provider for Internet of Things adoption, with the projected time before achieving the rate of return on investment being longer than expected (B = -.576, sig = 0.557), so organizations with longer time horizons (up to 5 years) are more likely to adopt Internet of Things devices and technologies. According to the regression model results, hypotheses H1, H2, H6 and H7 are accepted. On the other hand, hypotheses H3, H4, H5 and H8 are rejected. Therefore, organizational factors together with technological factors have a partial contribution and a significant effect on the adoption of Internet of Things devices and technologies, while inter-organizational factors have no effect.

5. CONCLUSION

Supply chain management is a common method of managing and organizing suppliers, manufacturers, warehouses, distribution centers and distributors efficiently in order to provide end clients with quality transportation, distribution, production and sales services at minimum costs. Along with socio-economic development, the modern business environment must also take into account aspects of providing satisfactory and quality services to customers and consumers in the sale of products. Enterprises in supply chains need to work together to provide a fast, easy, agile and flexible response to customer demands. In the modern business world, individual enterprises cannot compete as independent entities, but rather as active members of a supply chain, which entails a network of multiple businesses and relationships. As such, supply chains operate in an ever-changing environment and are vulnerable to a large number of risks that can arise at all levels, due to factors such as increasing geographical reach and customer demands for product customization, pricing and service levels. Product complexity is also increasing due to the perception of time passing faster driven by rapid changes in technology and the ongoing introduction of new products on the market. To survive in such a complex environment, enterprises need to be highly agile, to acquire a high level of resilience and structural flexibility and risk mitigation capabilities to address these challenges with a quick and concise response. Structural flexibility is defined as the capacity of the supply chain to adapt to fundamental changes in the business environment. Therefore, in order to achieve the desired level of resilience and flexibility, enterprises must have good visibility over the entire supply chain, along with a rapid response to changes and effective collaboration with suppliers and clients. Due to its ability to integrate internally the various processes and, more importantly, to integrate externally with suppliers or clients, Information Technology has a major impact on the nature and structure of supply chains, by improving communication, data collection and transmission, contributing to effective decision-making and improving supply chain performance. The Internet of Things technology is one of the latest developments in Information Technology, being a new Internet revolution that shifts the paradigm in many areas, including Supply Chain Management. The Internet of Things takes communication in supply chains to another level, enabling free interaction between objects and people, in addition to autonomous coordination between objects while they are in a warehouse facility or in transit between different supply chain entities. The Internet of Things therefore offers new levels of visibility, agility and adaptability for supply chains to cope with challenges. Data collected from smart objects is analyzed and transformed into actionable intelligence, providing unprecedented visibility into all aspects of supply chains on the one hand, and early warnings of internal and

external situations that require remediation on the other, thus helping improve the efficiency of supply chains. What has been lacking so far is not the availability of information, but rather the technologies to collect and process big data and the gap between data collection and action.

LITERATURE:

1. Arni, H., Kotzab, H. & Larsen, T., 2003. *Inter-organizational theories behind Supply Chain Management – discussion and applications.* In Seuring: Strategy and Organization in Supply Chains.
2. Bolstorff, P. & Rosenbaum, R., 2011. *Supply Chain Excellence: A Handbook for Dramatic Improvement Using the SCOR Model.* 3 ed. New York: Amacom.
3. Daugherty, P. J., Germain, R. & Droge, C., 1995. Predicting EDI technology adoption in logistics management: the influence of context and structure. *Logistics and transportation review, 31 (4),* 12, pp. 309-324.
4. Deshpande, R., Farley, J. U. & Frederick, E. W., 1993. Corporate Culture, Customer Orientation, and Innovativeness. *Journal of Marketing,* Volumul 1, pp. 23-27.
5. Ghobakhloo , M., Sabouri , M. S., Hong , S. T. & Zulkifli , N., 2011. Information Technology Adoption in Small and Medium-sized Enterprises; An Appraisal of Two Decades Literature. *Interdisciplinary Journal of Research in Business, Vol. 1, Issue. 7,* 7 07, pp. 53-80.
6. Handfield, R., 2020. *Supply Chain Resource Cooperative.* [Interactiv] Available at: https://scm.ncsu.edu/scm-articles/article/what-is-supply-chain-management-scm
7. Lassar, W., Manolis, C. & Lassar, S., 2005. The relationship between consumer innovativeness, personal characteristics, and online banking adoption. *International Journal of Bank Marketing, Vol. 23 No. 2,* 1 03, pp. 176-199.
8. McAfee, B., Glassman, M. & Honeycutt, E. D., 2002. The Effects Of Culture And Human Resources Management Policies On Supply Chain ManagementStrategies. *Journal of Business Logistics,* 23(1), pp. 1-18.
9. Neeley, R. K., 2006. Connective Technology Adoption in the Supply Chain. *University of North Texas.*
10. Patterson, K.A., Grimm, C.M., Corsi, T.M. 2003. Adopting new technologies for supply chain management," *Transportation Research Part E: Logistics and Transportation Review,* pp. 95-121.
11. Pavao, K. 2017. *Five Ideas: Modern Supply Chain.* [Interactiv] Available at: http://www.oracle.com/us/corporate/profit/features/5i-modern-supply-chain-2885920.html
12. Robinson, A., 2015. *Cerasis.* [Interactiv] Available at: http://cerasis.com/2015/01/23/ history-of-supply-chain-management/
13. Rutner, S., Gibson, B. & Williams, S., 2013. The impacts of the integrated logistics systems on electronic commerce and enterprise resource planning systems. *Transportation Research Part E,* pp. 83-93.
14. Sam, M., 2016. *The History And Progression Of Supply Chain Management.* [Interactiv] Available at: http://flashglobal.com/blog/infographic-the-evolution-and-history-of-supply-chain-management/
15. Selko, A., 2016. *IndustryWeek.* [Interactiv] Available at: http://www.industryweek.com/ global-economy/manufacturing-2020-80-companies-will-have-multi-country-operations

AFRICA ON TIME OF THE PANDEMIC: EDUCATION, HEALTH AND MOBILITY

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ABSTRACT

In Africa, the first case was reported in Egypt on February 14, followed by Algeria and Nigeria two weeks later. Until the end of February 2021, there were almost 4 million confirmed cases in Africa. However, the number of deaths remains relatively low. The pandemic has hampered the continent's development efforts. Thus, the growth rate in sub-Saharan Africa fell from 2.4% in 2019 to -5.1% in 2020. According to the latest edition of Africa's Pulse, the World Bank's biannual report on the African economic climate, the region is expected to fall into its first recession in more than 25 years. "The Covid-19 pandemic continue to test the limits of societies and economies around the world, and may deal a particularly hard blow to African countries"[1], says Hafez Ghanem, World Bank Vice President for Africa. The senior official of the institution of the Bretton Woods also believes that maximum resources were mobilized to meet the immediate medical needs and essential for the survival of their population. Official bilateral creditors are called upon to design a debt service moratorium that would strengthen health infrastructure in order to cope with the pandemic and mitigate its economic, social and humanitarian effects. According to the same report, African leaders are strongly recommended to strengthen health systems and respond quickly and effectively to avoid disruption in food supply chains and the damage that would cause. The authors of the report also recommend setting up safety nets for vulnerable populations and workers in the informal sector. While most African countries are affected to varying degrees by the pandemic, growth in real gross domestic product should, in particular, impact the three largest economies in sub-Saharan Africa (Nigeria, Angola and South Africa). The countries the most affected are those whose exports are composed mainly of raw materials. These are of course the countries commonly called «rentier countries ". It is not excluded that the health crisis will cause a food crisis. The contraction of agricultural production reached 7%. Still according to the World Bank, food imports suffered a serious blow, going from 13 to 25%, penalized by high transaction costs and sluggish domestic demand. Several African countries have reacted quickly to counter the proliferation of the Coronavirus. The international guidelines were generally followed to the letter. However, several factors may hamper the efforts made in particular; high population density in disadvantaged neighborhoods, lack of access to basic needs, non-compliance with hygiene and social distancing rules as well as the fragility of health systems. In short, the magnitude of the impact will ultimately depend on the reaction of the population and the response provided by the public authorities. The World Bank report insists on the need to propose policy responses adapted to the context of African economies (in particular the important place of the informal sector) as well as the specific constraints currently facing governments, in particular the reduction of budgetary leeway, The debt and the overall lack of operational capabilities to respond to the crisis. For Cesar Calderon, economist at the World Bank and lead author of the report, only debt relief will allow a return to social balance and, at the same time, preserve the region's macroeconomic gains.

[1] https://www.banquemondiale.org/fr/news/press-release/2020/04/09/covid-19-coronavirus-drives-sub-saharan-africa-toward-first-recession-in-25-years

IMF economists defend the same point of view. They stress the importance of rapid action to help developing countries step up their action against the pandemic and improve health surveillance, while supporting the private sector to enable businesses to continue their activities and maintain jobs. Beyond the purely economic and health aspects, the crisis should be analyzed from a geopolitical angle due to its strong correlation with other aspects that risk shaping the future of the continent.
Keywords: *Africa, Education, Health, Mobility, Pandemic*

1. THE GEOPOLITICAL DIMENSIONS OF THE HEALTH CRISIS IN AFRICA

A review of the literature on Covid-19 reveals other aspects of the crisis that are more relevant to the field of geopolitics; it is about security, migration and terrorism. Combined with other global factors, the assembly of the dimensions mentioned above suggests a new configuration of relations between Africa and the great powers on one side and between Africa and emerging countries on the other. It is important to remember that although at first glance these issues may seem distinct from each other, they should be addressed together as they influence and influence each other.

1.1. Health crisis and security impact

The global epidemic could wreak havoc in fragile states, triggering widespread unrest and put a strain on crisis management systems. Its implications are particularly serious for those caught in the middle of a conflict if the disease disrupts the flow of humanitarian aid, limits peace operations and diverts the parties in conflict from emerging or ongoing diplomatic efforts. Some leaders may exploit the pandemic to advance their goals in ways that exacerbate national or international crises - quelling dissent at home or deepening conflicts with rival states. The Covid-19 has fueled geopolitical friction. The United States blames China for the disease while Beijing tries to win friends by donating vaccines to affected countries, exacerbating existing tensions between the great powers and complicating cooperation in crisis management. The dramatic economic slowdown, already underway is disrupting trade flows and will create unemployment rates that will do unprecedented damage. Such a recession could take a heavy toll on fragile states where the risk of unrest and conflict is highest. African populations affected by conflict are likely to be particularly vulnerable to epidemics. In many cases, war or protracted unrest, especially when compounded by mismanagement, corruption or foreign sanctions, has left national health systems deeply unprepared for COVID-19. In addition to these institutional problems, it can be difficult to persuade populations who have little confidence in their leaders to follow public health guidelines. Following the outbreak of the 2014 Ebola epidemic in Guinea, Liberia and Sierra Leone , the virus initially spread unchecked not only due to weak epidemiological surveillance and inadequate capacities and response of health systems, but also because people were skeptical of what their governments were saying or asking them to do. The doubts stemmed in part from disinformation and bad advice on contagion from the governments concerned, but also from recurring political tensions in a region marked by war in the previous decade. The conflict areas with the greatest immediate risk of COVID-19 outbreaks could be Cameroon, Somalia, Mali, South Sudan, Nigeria, Central African Republic, Kenya or Libya. Since the outbreak of the epidemic, United Nations officials have continued to sound the alarm bells about the COVID-19 infection of the displaced. Many people fleeing the clashes sleep in the fields or under the trees, and basic hygiene and social distancing practices are practically impossible due to the lack of running water or soap as well as by the cramped living spaces. The pandemic has exacerbated the challenges already facing a region with one of the biggest humanitarian crises in the world, involving more than nine

million displaced persons in Africa and the Middle East[2] by force. The pandemic has caused borders to be closed and added increased pressure on health systems, which were already very vulnerable. The UN fears that the potential movements of Malians, Nigerians, Somalis, Nigerians, Cameroonians and Sudanese seeking international protection will be hampered by these restrictions. In addition to precarious security (especially in the Sahel and the Lake Chad Basin), restrictions imposed by Covid-19 also hamper humanitarian efforts to support and assist those in need. On the ground, the situation remains worrying. Thus in Burkina Faso, for example, Malian refugees left their Goudoubo camp to flee attacks by armed groups. Some have taken refuge in overcrowded sites initially reserved for internally displaced persons. In Niger, humanitarian access, already limited in the northern regions of Tahoua, Tillabery and Diffa due to increasing violence, is now even more restricted due to the pandemic. In Mali, campaigns against sexual violence and awareness programs on human rights and social cohesion are suspended to limit public gatherings. In the Central African Republic, UNHCR staff report that in some localities, armed groups are forcing internally displaced people to return to their places of origin, blaming them for the potential spread of Covid-19. In many cases, women, who often constitute the majority of internally displaced persons in conflict-affected areas, will feel the impact of COVID-19 on refugees and internally displaced persons disproportionately. These women's access to services and their ability to feed their families are already severely limited by the stigma attached to their links (real or suspected) with armed groups. Exposed to sexual exploitation or abuse, their rehabilitation or reintegration into communities not a priority for weak or indifferent governments. Thus, displaced women and children are the first to be affected by the crises that will accompany the spread of the disease. This combined with the other economic effects of COVID-19 - such as the disappearance of tourists in areas that rely heavily on foreign visitors - could lead to economic shocks that will last well beyond the immediate crisis, creating the potential for disruption. Prolonged periods of work and social instability and making it possible to envisage the likelihood of an unprecedented migration crisis.

1.2. The premises of a migration crisis

COVID-19 will most likely affect the general economic conditions of migrants and reinforce the factors aggravating irregular mobility. Politically, the narratives that fuel the fear of "outsiders" can be easy to disseminate and consume in times of crisis when the economy slows down and inward-looking social and economic policies seem most secure. The coronavirus pandemic has made mobility within the European Union difficult. Long considered one of the great successes of European integration, the Schengen area is frozen, following the closure of borders. Despite its temporary nature, this closure will inevitably have consequences for mobility both inside and outside the European Union. Tightening of Schengen visa requirements for African nationals can be expected, despite the fact that the EU has put in place a new, long-awaited Schengen visa code that aims to ease visa requirements for regular African travelers. The code entered into force in February 2020, and its survival will depend on the political choices made by the EU. Migrants stranded at the external borders of countries should be provided with adequate resources to prevent the spread of the pandemic. Particular attention should be paid to the early detection of infected persons and their treatment. The International Organization for Migration (IOM) says that three quarters of the refugees and migrants in the world are hosted in developing countries where health infrastructure is very limited. Consequently, specific funds should be devoted to the supply of detection kits and health equipment to the structures concerned in the host countries. Aid workers should also be allowed to continue their missions with migrants and refugees under optimal conditions, providing them

[2] https://www.unhcr.org/fr/news/stories/2020/3/5e7e0adea/lacces-services-sante-essentiel-lutter-contre-covid-19-sauver-vie-refugies.html

with the necessary resources. General living conditions in the centers should be improved and migrants should have better access to sanitary and hygiene products. IOM has stressed that many irregular migrants and asylum seekers may be reluctant to seek help if they show symptoms of COVID-19 because they fear being intercepted or detained by authorities in host countries. In a region infested with terrorist groups, a health crisis coupled with a migratory crisis is certainly an opportunity for the supporters of the theology of terror. Scenes of kidnapping young women and children in refugee camps have become commonplace as central powers are either confined to capitals or concerned about tackling the pandemic in crowded areas. We believe that it is impossible to "contain the evil" especially when terrorism takes advantage of the pandemic to reign terror among the most vulnerable populations in certain regions of the continent.

1.3. Is the health crisis an opportunity for terrorist groups?

In the light of COVID-19 and its various effects, in particular on social dynamics and counterterrorism efforts, it seemed opportune to provide a new analysis of the current developments on the continent. Despite the pandemic, attacks continue. During this crisis, certain terrorist groups were very active, taking advantage of a favorable situation for a certain number of organizations. Thus, the JNIM group (Jamaat Nousrat al Islam wa al Mouslimin), took advantage of the absence of the Malian regular army on the front to regain control of most of the Malian Gourma region, even driving out the ISGS (Organization of the Islamic State in the Greater Sahara) from some of its traditional strongholds in the province of Soum to the north. Based in Mali and Burkina Faso, Katiba Macina or the Macina Liberation Front was created in January 2015 following the arrival of French troops in Mali in 2013, with Amadou Koufa as leader. The group attacked a military convoy in Mali, killing 24 soldiers on June 15. He is also accused of having committed an attack on an Ivorian military base on June 11. Ansaru is an Al Qaida affiliate based in northwest Nigeria, which, although it was created in 2009 as a faction of Boko Haram, became independent in 2012 and has since emerged from "dormancy". January 2020. Recently, this group killed six soldiers and abducted civilians during the attack on January 15. In February 2021, it is even believed that the group had anti-aircraft guns. Based between Mali, Burkina Faso and Niger, the Organization of the Islamic State in the Greater Sahara (ISGS) is a subsidiary of the Islamic State. France reportedly arrested an important ISGS leader on June 6, while some of its fighters fled to Mauritania. In March 2020, fighters from the Boko Haram group seized the opportunity of Covid-19 to assassinate 92 Chadian soldiers when the Nigerian army killed more than 56 of its members. On June 10, in the village of Felo, in Nigeria's Borno State , attackers from the Islamic State in West Africa (EIAO), a subsidiary of Boko Haram , killed nearly 69 people. The dynamism of terrorist groups is largely linked to the absence of regular armies in conflict zones and the rise of several “sleeper” cells in some countries. Terrorists take advantage of the health crisis and the overflow of local authorities to establish their hegemony over border areas or in regions qualified as non-lawful areas.

1.4. Covid-19: towards a new configuration of African-Emerging relations

Mixed and controversial by their nature, relations between Africa and the BRICs[3] were not always smooth, especially with the Chinese dragon. Proponents of liberal orthodoxy believe it would be more Chinese-style neocolonialism this time around. Mega-projects of course, but with social benefits that are always conclusive. African governments that have close trade relations with China are feeling the pain of the slowdown caused by the outbreak from Wuhan. Oil producers are already grappling with volatile energy prices. A country like Nigeria, which has strong import / export links with China and which depends on oil prices to support its public

[3] In the current paragraph, we are talking about the BRICs and not the BRICS since it is about emphasizing the role of emerging countries outside Africa in a post-Covid perspective.

finances, is suffering. Abuja has reportedly considered cutting spending by 12 % in 2021, which means the authorities may have to break promises to increase the minimum wage. An important point to keep in mind is that even before the outbreak of the coronavirus, several African countries were increasingly concerned about the level of debt build-up to China - largely due to the infrastructure projects. Many observers have argued that unsustainable debt or what has been termed a " debt trap " by many analysts increases dependence on China. A detailed report released in 2018 by the Belfer Center for Science and International Affairs at Harvard University called " debt book diplomacy " the phenomenon of China lending to developing countries that are often unable to repay. In a post-coronavirus world, Africa may reassess its economic ties with China. A number of countries have already started to hint at the need to renegotiate Chinese loans. This is the case of Tanzania. Tanzanian President John Magufuli, who urged international creditors to cancel debts of African nations, has decided to cancel a Chinese loan estimated at $ 10 billion. In order to stem the economic slowdown linked to Covid-19, the Nigerien president, Mouhamadou Issoufou, called for a " Marshall plan for Africa ". His Senegalese counterpart Macky Sall called for the cancellation of public debt contracted abroad. At the end of March, African finance ministers revived the discussion. The United Nations Conference on Trade and Development CNUCED, which advises aid of 2.5 trillion dollars, including the forgiveness of 250 billion in debt, to cushion the Covid-19 crisis in Africa, supported their call. The idea was also supported by the Bretton Woods institutions at the end of March and taken up by Emmanuel Macron in his speech on Monday, April 13, 2020. The French president spoke of the need for a "massive cancellation" of the African debt by Europe. The European Union (EU) on Tuesday (April 28) granted funding of 194 million euros to the G5 Sahel countries to strengthen their security forces and it committed during a video conference to examine the request for African debt cancellation[4]. China, the continent's largest donor, seems to be on the way to debt rescheduling. Beijing could freeze repayments to let African economies breathe, but not cancel them entirely. As for Afro-Indian relations, they are less controversial than those with China are. India is currently Africa's fourth largest trading partner and the third largest destination for African exports. After South Asia, Africa is the second-largest recipient of Indian aid abroad, with lines of credit worth nearly $ 10 billion spread across 100 projects in 41 countries. 6000 Indian troops are currently deployed in United Nations peacekeeping missions in five conflict zones in Africa. However, it should be pointed out that during the pandemic India's interest in its African partners declined. India mainly provided in-kind aid (detection kits and hydroxychloroquine) with a value not exceeding $ 8 million. An insignificant sum for a country considered the continent's second trading partner with a trade volume of over 45 billion dollars annually. Indian indifference to Africa will certainly condition Afro-Indian relations for the post-Covid-19 period. Russia's attitude is "less mixed" than its Chinese and Indian counterparts. The Russian Foreign Ministry said some countries have requested Moscow's support to combat Covid-19 and that these requests are "carefully considered" adding that the rates of the virus spread are relatively low in Africa, except in Egypt, Morocco and South Africa[5]. It is therefore clear that for the Russians, the provision of comprehensive assistance in matters of Covid-19 is practically impossible for all of Africa. Historically, Russia has always had a marked preference for the Maghreb region and the countries of southern Africa. Thus, during the first months of the pandemic, aid was provided to Algeria, Egypt, Morocco and Tunisia in North Africa. In southern Africa, the beneficiaries have been Mozambique, South Africa and Zimbabwe, according to various African media reports. Regarding Brazil, his interest in the continent goes through Morocco.

[4] https://www.lemonde.fr/afrique/article/2020/04/29/l-union-europeenne-va-examiner-l-annulation-de-la-dette-africaine-demandee-par-le-g5-sahel_6038127_3212.html

[5] https://allafrica.com/stories/202005150276.html

Brazil is the third destination for Moroccan exports and the Kingdom's first partner in Latin America. However, Brazil's participation in the effort to fight the pandemic in Africa is almost non-existent, including in Portuguese-speaking countries such as Angola, Mozambique, Guinea Bissau and Cape Verde. For the other great Emerging, which is Turkey, the Turkish Minister of Foreign Affairs Mevlüt Çavuşoğlu sent several important messages on the future of Turkish-African relations. On May 25, Çavuşoğlu presented the figures that show the evolution of the Turkish-African partnership during the past 18 years with stronger diplomatic, economic and trade, greater Turkish humanitarian aid in Africa, scholarships higher or more flights of Turkish Airlines to African destinations. He said that this win-win vision would continue during the period post-coronavirus. Several African countries have benefited from Turkey's support since the outbreak of the pandemic (drugs, screening kits, masks, etc.). This is particularly Algeria, Ethiopia, Chad, Somalia and Djibouti. As the great Emerging adopt a controversial stance towards Africa, the Kingdom of Morocco is emerging as the continent's new rising force. King Mohammed VI has proposed the launch of an initiative of African heads of state aimed at establishing an operational framework to support African countries in their various phases of managing the pandemic. There is no doubt that, in a post-Covid logic, Africa will continue to be the object of all covetousness since it is a region with enormous potential (human capital, rate of growth, natural resources…). However, in the face of the indifference of some and the involvement of others, Africa will certainly have to thoroughly review its relations with the rest of the world. The new configuration of relations with the BRICs as with other emerging countries (Turkey, Egypt) or emerging countries (Morocco) will certainly take into account what each country or sub-region has been able to capitalize on as experience during the pandemic.

2. COVID-19: A THREAT BUT ALSO AN OPPORTUNITY FOR AFRICA

A year after the detection of the first case of Covid-19 in Africa, we have made efforts to identify some of the most significant impacts of the pandemic, as well as the possible opportunities that the current crisis could create. Our reflection concerns the impact of the crisis on African economies and populations, as well as the possibilities for the development of intra-African trade, technological innovation, and the promises that a new contract between leaders and citizens could represent. The health crisis will certainly lead to a slowdown in growth. Initially, we expected a rate of 3.2%. Today, the most optimistic analyzes point to a bleak future for growth in Africa since, according to a World Bank report, this rate did not exceed –3.3 % during the year 2020[6]. The economic cost of containment is estimated at $ 69 billion per month. For Vera Songwe, economist at the World Bank; the main challenges each country faces are saving jobs, preventing citizens from sliding deeper into poverty, and protecting the most vulnerable while stopping the spread of the virus. As a result, there is a need to provide immediate support of at least $100 billion to meet health and humanitarian needs, to put in place emergency economic stimulus measures to provide budget support to countries, and increase private sector liquidity to protect jobs. She added »We are in a long period of slow growth, which means increased poverty in African markets, particularly in countries that depend on oil for government revenue and foreign exchange "[7]. With controversial prowess in the evolution of vaccination campaigns, Africa could see itself inflicting considerable losses in the fight against poverty after a good ten years of combating deprivation and relative progress in the field of public health. In a continent where the economy continues to be dependent on commodity prices, a large number of rentier countries are now witnessing an unprecedented decline in their foreign exchange reserves due to fluctuations in oil and gas prices in the world market. Not to mention the decline in public revenues and therefore the exacerbation of poverty that this could

[6] https://www.banquemondiale.org/fr/region/afr/overview
[7] https://covid19africawatch.org/100-days-of-covid-19-in-africa/

cause. For the slightly more optimistic Fairfax Africa Fund, the continent's economic forecasts will depend on several factors, the most important of which is whether all Africans will have access to the vaccine or not. If this is the case, a strong expansion of economic activities in the world, including Africa, with overall GDP growth returning to levels almost equal to those before the Covid-19 in 18 to 24 months is possible. The various authors of the report converge on the fact that if the vaccination campaigns do not go as planned in the next 12 months, Africa will experience unemployment rates never reached in the past, not to mention the impoverishment of the population, and a low level of public revenues with all the uncertainty that this could generate. It is widely accepted that the pandemic has had a huge impact on the supply chain. Disturbances, which inevitably influenced the structure of trade at the global level. This movement because of their dependence on international markets, in particular, has not spared African markets in terms of imports, many of which can be produced locally. Thus, the pandemic has opened up new opportunities for local producers. Can the current situation be the occasion to realize the dream of an African continental free trade area (launched in 2018 and which was supposed to start in July 2020)? Except that for this, a political will consisting in creating a favorable environment is required. The other opportunity that the Covid-19 crisis offers Africans is the expansion of the digital economy. Electronic commerce is experiencing an unprecedented boom in Africa. In the opinion of IMF experts[8], it is probably an irreversible process. Still according to the IMF, The use of ICT is on the rise in Africa. This concerns online payments, administration, education ... etc. Today, there is agreement that virtual boards, online signatures and paperless document sharing are increasingly becoming the norm in many African business circles. Although they have been around for some time, these technological solutions were not considered acceptable forms of doing business in Africa before the pandemic. It will be difficult to turn back once a certain normalcy is restored. By forcing a new way of doing things, the pandemic has opened the door to a new way of thinking that should once again offer Africa the luxury of skipping decades of progress in other parts of the world, in order to claim the continent's share of the benefits of the digital age. One year after the outbreak of Covid-19 in Africa, uncertainty remains the golden rule. Most international institutions remain without opinions when it comes to deciding the future of the crisis. However, all agree that the fight against the pandemic has been largely aided by the combined action of governments, institutions, academics, businesses, civil society and ordinary citizens. The world after Covid will depend in the first place on the sustainability of this spirit of solidarity even if this remains relatively relative in the face of a multifaceted Africa. Africa is surprising, In some countries, Covid-19 has shown that another Africa is possible if the response is inclusive in the sense that we take into account the weight of the informal sector. These through attempts at "informal reform", but this time gently. This is the principle of "soft relativism" dear to supporters of critical thinking. With this in mind, a merciless fight against inequality is inescapable. It is therefore clear that a plural approach is required. The determinism of international institutions regarding the management of successive crises in Africa ended in a fiasco. In times of crisis, a possible triumph of the local over the global is possible. Inter and intra-community solidarity, the dynamism of the informal sector, African-style altruism, and the political will in emerging democracies constitute a lever for the Africa of tomorrow in the face of an increasingly uncertain world situation. Shouting " victory " ahead of time could translate into a fanfare of the pandemic with its share of loss of life and economic depression. It is commonly accepted that the Covid-19 pandemic in Africa is not only a health crisis but also an economic, social and human tragedy. Economies, lifestyle as well as purchasing power have been strongly impacted as demand for African commodities has fallen and tourism has fallen sharply. Remittances - which can represent more than 10% of gross domestic product (GDP) - are also drying up.

[8] https://www.imf.org/external/pubs/ft/fandd/2020/06/pdf/COVID19-pandemic-impact-on-remittance-flows-sayeh.pdf

The price of oil, which accounts for 40% of African exports and 7.4% of GDP, has halved, which has sharply reduced the income of countries like Nigeria and Algeria. A similar collapse in coffee and cocoa prices has lowered the incomes of Ethiopia, Kenya, Côte d'Ivoire and other producers. The pandemic has had a disproportionate impact on households and businesses in the informal sector. In times of crisis, what worries the modest African is the means of subsistence. Workers in the informal sector, or 85.8% of the workforce, who lack social protection or shock absorbers against economic shocks, face devastating consequences. This is especially true for women who constitute the majority of workers in this sector. The pandemic has also exposed long-standing weaknesses and inequalities, including systemic discrimination against women and girls. According to a UNDP report, an alarming increase in the levels of domestic violence and violations of human rights within the containment has been found. Not to mention the stories of pain, anxiety, frustration, and angst. There is no doubt that African leaders have taken the right steps that have saved lives and saved the thrifty from collapse. However, the lack of visibility as well as the lack of rigor of certain regimes could prove fatal for the populations. Indeed, the pace of disruption is likely to accelerate in the coming months, especially in countries whose economies depend heavily on oil exports. Africa's economic growth could contract, pushing an additional 29 million people into extreme poverty. As the toll grows, face-to-face schooling is largely suspended, forcing children to drop out of school, thus creating uncertainty about their ability to continue their education and losing some of the achievements of the children. In the last five years food shortages, including maize, cooking oil and flour, could trigger a food crisis if problems such as locust plagues that devour crops and pastures are not addressed. In East Africa, The disruption of global supply chains also significantly affects export capabilities. Based on this observation, we believe that governments, the private sector and international institutions should thoroughly review their strategies in order to preserve livelihoods in a continent haunted by poverty, illiteracy and morbidity. Faced with such a dramatic situation, there is also hope, anchored in the customary spirit of solidarity and African goodness "I am because we are». Doctors, nurses, other frontline workers, and ordinary citizens, men and women, young and old, are showing sacrifice, courage and commitment in the fight against the pandemic. Women represent 70% of the health workforce; they risk their lives to save others, as doctors, nurses, laundresses, orderlies and others. Young Africans offer innovative solutions to health problems. Governments have announced aid measures. Companies are converting their production lines to make masks, disinfectants, gowns, and more. These positive developments help to maintain hope. Barely a few months ago, we were talking about this Africa of the possible. Some of the fastest growing economies in the world were on the continent. The expansion of internet access has continued to push the boundaries of innovation for Africans, especially young people. We must therefore be confident that the pandemic is not necessarily unsurpassable, and that the African sun can shine again - thanks to the young people of the continent, to innovation and to real partnerships for better recovery. Despite the devastating effects of the pandemic, Africa can better rebuild itself. Here are some ways to achieve this:

- First, improve access to free vaccine and medical supplies by creating lanes to facilitate rapid movement, suspending tariffs on medical items, establishing price control mechanisms, and encouraging local manufacture of medical supplies.
- Second, protect small and medium-sized businesses, including by providing tax benefits and taking advantage of the opportunities offered by the digital economy.
- Third, to implement the African Continental Free Trade Area to accelerate Africa's industrialization and position its economy so that it can better withstand future global shocks.

- Fourth, take advantage of the crisis to accelerate the transition to low-carbon growth with a shift to economies that avoid air pollution, create green jobs and ensure clean and sustainable consumption and production.
- Fifth, women must be present at the decision-making table. It is also urgent to call on the talent of young people if we are to truly succeed in transforming Africa into a land of inclusion and prosperity that will serve future generations.

3. CONCLUSION

A year has passed since the appearance of Covid-19 in Africa, and uncertainty remains the rule. The most seasoned experts are left without opinions when it comes to deciding the future. However, all agree that the fight against the pandemic has been largely aided by the combined action of governments, institutions, academics, businesses, civil society and ordinary citizens. The return to normal will depend in the first place on the perpetuation of this spirit of solidarity even if this remains relatively relative in the face of a multifaceted Africa. The crisis could be the answer to a series of curses that have befallen Africa since the advent of independence. The continent is surprising. In some countries, Covid-19 has shown that another Africa is possible if the response is inclusive in the sense that we take into account the weight of the informal sector. This through attempts at " reform of the informal " but gently this time. This is the principle of " soft relativism " dear to supporters of critical thinking. In this spirit, a merciless fight against inequalities is essential. Ultimately, the magnitude of the impact will depend on the reaction of the population and the response of the government.

LITERATURE:

1. https://www.lci.fr/international/carte-coronavirus-bresil-etats-unis-mexique-chine-espagne-quels-sont-les-pays-les-plus-touches-dans-le-monde-2143601. html
2. https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-corona virus/covid-19-current-situation/covid-19-current-cases/covid-19- significant-clusters
3. https://www.banquemondiale.org/fr/news/press-release/2020/04/09/covid-19-coronavirus-drives-sub-saharan-africa-toward-first-recession-in-25-years
4. https://www.banquemondiale.org/fr/region/afr/overview
5. https://www.fairfaxafrica.com/
6. https://covid19africawatch.org/100-days-of-covid-19-in-africa/
7. https://www.crisisgroup.org/middle-east-north-africa/north-africa/libya
8. https://allafrica.com/stories/202005150276.html
9. https://www.imf.org/external/pubs/ft/fandd/2020/06/pdf/COVID19-pandemic-impact-on-remittance-flows-sayeh.pdf
10. https://www.worldbank.org/en/country/nigeria/brief/monitoring-covid-19-impact-on-nigerian-households
11. https://afrique.latribune.fr/economie/conjoncture/2017-06-10/afrique-du-sud-apres-fitch-et-standard-moody-s-abaisse-ealement-sa-note-735902.html
12. https://www.lemonde.fr/afrique/article/2020/04/29/l-union-europeenne-va-examiner-l-annulation-de-la-dette-africaine-demandee-par-le-g5- sahel_6038127_3212.html
13. https://www.unhcr.org/fr/news/stories/2020/3/5e7e0adea/lacces-services-sante-essentiel-lutter-contre-covid-19-sauver-vie-refugies.html
14. https://www.uneca.org/sites/default/files/PublicationFiles/rapport_de_la_covid-19_en_ afrique_du_nord_fr-final_1.pdf
15. Friendman J., Islamist-Inspired Terrorist Activities during the COVID-19 Period, working paper.
16. Hugon P., *Africa of Uncertainties*, Paperback, Paris, 1995.
17. Jacquemot P., *Africa of possibilities, the challenges of emergence*, EKarthala, Paris, 2017.

18. Moyo D., *Fatal aid: the ravages of unnecessary aid and new solutions for Africa*, JCLattès, Paris, 2009.
19. Next Einstein Forum, *Best in Classe, Covid-19 responses*, May 2020.
20. Policy Center for the New South, La Stratégie du Maroc face au Covid-19, in *Policy Paper*, PP 20-07, April 2020.
21. https://www.banquemondiale.org/fr/news/press-release/2020/04/09/covid-19-coronavirus-drives-sub-saharan-africa-toward-first-recession-in-25 -years
22. https://www.unhcr.org/fr/news/stories/2020/3/5e7e0adea/lacces-services-sante-essentiel-lutter-contre-covid-19-sauver-vie-refugies.html
23. In the current paragraph it is a question of talking about the BRICs and not the BRICS since it is a question of underlining the role of emerging countries outside Africa in a post- Covid perspective.
24. https://www.lemonde.fr/afrique/article/2020/04/29/l-union-europeenne-va-examiner-l-annulation-de-la-dette-africaine-demandee-par-le -g5-sahel_6038127_3212.html
25. https://allafrica.com/stories/202005150276.html
26. https://www.banquemondiale.org/fr/region/afr/overview
27. https://covid19africawatch.org/100-days-of-covid-19-in-africa/
28. https://www.imf.org/external/pubs/ft/fandd/2020/06/pdf/COVID19-pandemic-impact-on-remittance-flows-sayeh.pdf

REGIONAL MILIEUS AND EFFICIENCY OF BUSINESS ADVICE PROGRAMMES

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ABSTRACT

This paper analyses the impact of regional correlates on the efficiency of business advice to small and medium-sized enterprises (SMEs) in the Slovak Republic. The research is based on a sample of 454 Slovak SMEs participating in the business advice programme. We hypothesise that (a) change in the economic performance of supported firms was impacted by the relative size of support, and (b) regional correlates moderated the effects of support on economic performance. We paired the list of programme participants with their annual financial accounts and observed change in their economic performance. Factor and regression analyses were combined in order to establish the potential impact of regional correlates on the efficiency of business advice. The factor analyses reduced the original 11 input variables on regional correlates into two meaningful factors ('Development' and 'Poverty'). The factor scores were the explanatory variables for ordinary least squares regression. Furthermore, we used control variables on enterprise age, technology intensity, industry of business, and support size in the regression. The support size was expressed in relative terms (support/assets). Only two variables became significant at the 0.1 level: enterprise age and relative size of support. All other variables, including regional correlates of business advice, were insignificant. The overall R-squared (0.006) was very low, but the effect size was commensurable with the intensity of support.

Keywords: *business advice, regional disparities, small and medium enterprises*

1. INTRODUCTION

1.1. Business advice to small and medium-sized enterprises

Business advice programmes are one of the most common policy interventions aimed at improving the performance of small and medium-sized enterprises (SMEs). The managers of SMEs often cope with a lack of skills and human capital (Bennett and Robson 2003; Johnson et al. 2007; Carrey 2015). Many governments in developed and developing countries have designed business advice programmes to improve business skills and management practices (OECD 2007; Kösters and Obschonka 2011; Pergelova and Angulo-Ruiz 2014; McKenzie and Woodruff 2014; WWC 2016; Chatterji et al. 2019; Cravo and Piza 2019). Such programme interventions typically have large samples of supported enterprises and a relatively low cost of support per participant. Some programmes aim at start-ups only, while others try to enhance the growth of established firms.

This paper analyses the impact of regional correlates on the efficiency of business advice to SMEs in the Slovak Republic. The research is based on a sample of 454 Slovak SMEs participating in the business advice programme. We hypothesise that (a) change in the economic performance of supported firms was impacted by the relative size of support, and (b) regional correlates moderated the effects of support on economic performance. The paper is organised as follows. Firstly, the remainder of this chapter provides the literature review. The research gap is identified and the research hypotheses, as well as the novelty and originality of the research approach, stated. Chapter two introduces the data sources and presents the process of data preparation. Chapter three turns to the research methods. Factor and regression analyses are combined in order to establish the potential impact of regional correlates on the efficiency of business advice. The concluding chapter summarises the major findings and discusses their limitations. Moreover, the chapter suggests some directions for further research.

1.2. Literature review

Evaluating the efficiency of business advice programmes is a challenging task. A plethora of factors may impact the evaluation of the programme results, e.g. multiple and vague targets, self-selection by applicants for the support scheme, and a tendency by managing authorities to report positive outcomes only (WWC 2016). The majority of studies on business advice programmes concentrate on the effects of programmes on sales, assets, profits and employment. Usual correlates include enterprise size, age, sector of business, and details on the business owner/manager (e.g. gender, age, education, experience, motivation) (Benus et al. 2009; Kösters and Obschonka 2011; Mole et al. 2011; Fairlie et al. 2015; Kuhn et al. 2017; Chatterji et al. 2019; Bruhn et al. 2018). Quite a few studies consider the regional correlates of a policy intervention. Some authors mention specific regional agencies implementing business training/advice programmes but do not analyse the efficiency of such programmes with respect to specific regional milieus (Benus et al. 2009; Mole et al. 2011; Fairlie et al. 2015). The regions usually are very large, such as NUTS 1 in the UK (Mole et al. 2011), Western and Eastern Germany (Oberschachtsiek and Scioch 2015), or US states (Benus et al. 2009), but there are significant disparities within the NUTS 1 region. Another problem relates to the choice and number of regional correlates. Oberschachtsiek and Scioch (2015), for example, analysed German coaching and training programmes for self-employment. They controlled for local unemployment only. Other regional correlates of business advice programmes, such as wages and educational and urbanisation levels, rarely are analysed in evaluation studies on business advice programmes. Most business advice programmes distribute their support via low-cost activities such as seminars and workshops (Sawang et al. 2016). The average value of support is as low as several hundred dollars or euros per participant. The effect size is likely to be low and not easy to detect. It is unsurprising that evidence on the efficiency of business advice programmes is inconclusive. Some studies, however, establish that the efficiency of support increases with the support size (Mole et al. 2011; Bruhn et al. 2018).

1.3. Research gap

Previous research has concentrated on the design of support programmes and differences in the economic performance of supported versus unsupported firms. Regional milieus have been largely absent in analysis. This is rather unusual. The SMEs residing in poor regions may account for lower levels of experience and human capital than those in prosperous regions. The Slovak Republic accounts for substantial regional disparities. The per capita gross domestic product (in purchasing power parity, GDP in PPP) stood at 162% of the EU-27 average in the Bratislava NUTS 3 region but 45% in the Prešov region in 2018 (Eurostat 2021). The disparities were even more pronounced at the LAU-1 level (former NUTS 4 level).

The unemployment rate, for example, was 2.0% in the Bratislava V district but 16.2% in the Revúca district in 2018 (Figure 1). The 79 Slovak districts accounted for vast disparities in terms of enterprise density, educational levels, and the proportion of the population in material deprivation (Figure 1). We hypothesise that SMEs in poor regions benefitted from the business advice programme more than did those in developed regions.

1.4. Hypotheses

Based on the literature review and the research gap, two hypotheses were proposed:
Hypothesis 1: The size of support moderates the effects of support on economic performance;
Hypothesis 2: Regional correlates moderate the effects of support on economic performance.

1.5. Novelty and originality

Our research has some novel elements. We use original companies' annual accounts, rather than survey-based data, to obtain data on economic performance. We introduce a high number of regional variables in order to elicit the potential impact of regional milieus on the efficiency of business advice. The regional data are quite detailed. They refer to 79 Slovak districts (LAU-1, former NUTS 4 level). The average size of a Slovak district was 6,200km2 with a population of 68,000 in 2018. Previous research has operated with much larger territorial units.

2. DATA

2.1. Data sources

Two major datasets were used for analysis. The first dataset refers to a list of programme participants. The list was provided by the Slovak Business Agency (SBA), the managing authority of the business advice programme. The programme supported 11,355 applicants with €4.484m in four different sub-programmes in the period 2017–2019. This paper refers to the business advisory services provided under the Growth sub-programme. The sub-programme supported 4,411 applicants with €1.961m in the abovementioned period. Both companies and personal businesses were eligible for the support. We further refer to companies (legal persons) only. We pair the list of participants with their annual financial accounts. The accounts are available for companies only in Slovakia. The FinStat database provided data on companies' assets and sales in the period 2016–2020. The database is available upon payment. Participants in the business advice programme benefitted from short- and long-term individual and group advice. Typical themes of the advice included advertising, marketing, management, business plans, laws and regulations, taxes, the digital economy, and communication with clients. The advice was provided for free but the managing authority recorded its cost (computed on a per-hour basis). One participant (company or personal business) could apply for several advisory services. We used information on the amount of advice received by individual participants. The median value of support was €400 per company. The maximum value of support was as high as €14,267, while the minimum one was only €3 per participant. Figure 2 displays the regional distribution of the support to business advice. Most support was concentrated in the relatively prosperous districts in the western part of Slovakia. The second dataset refers to regional variables on unemployment rates, average wages, enterprise density, urbanisation and educational levels, material deprivation rates, the proportion of the marginalised Roma population in relation to the total population, and the performance of the regional educational system. All data were available for the 79 Slovak districts. The data were compiled from various sources such as the Slovak Statistical Office, the Ministry of Education, and the Slovak Central Office for Labour and Social Affairs.

2.2. Data preparation

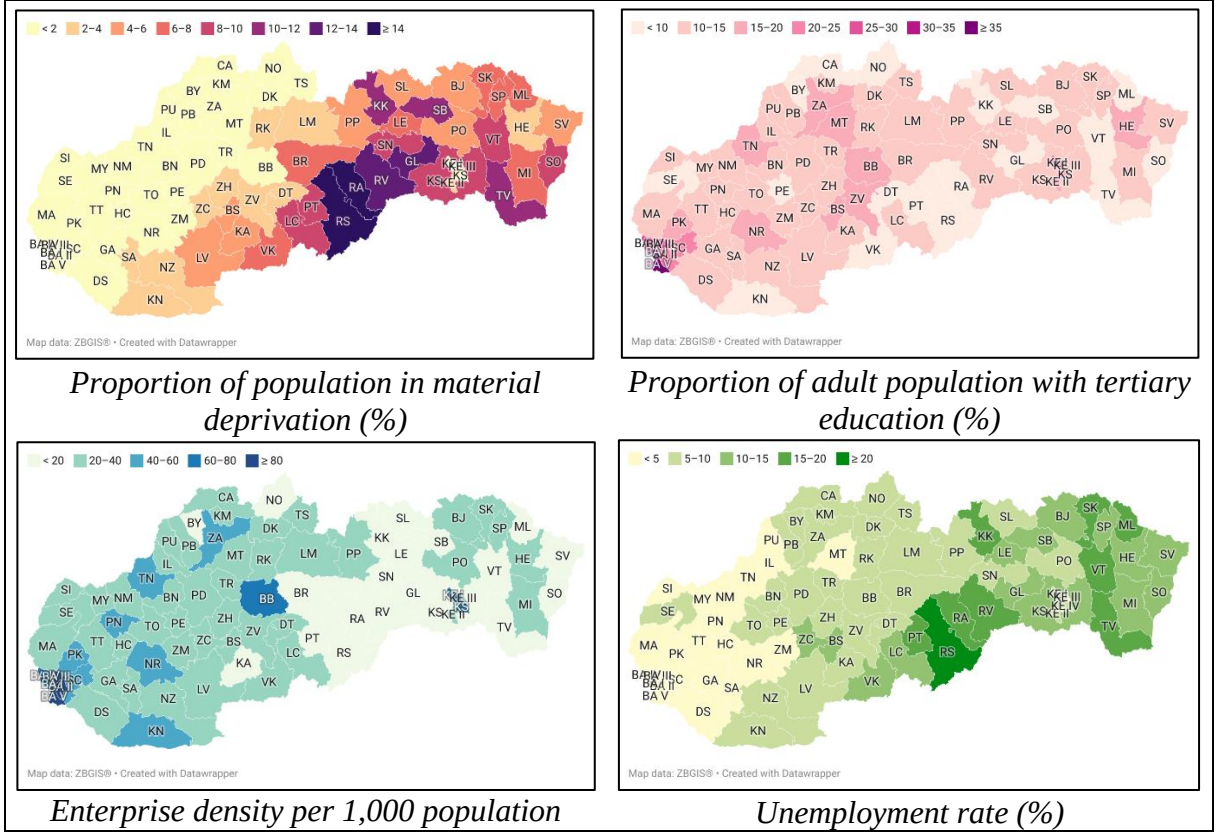
The data cleaning was performed in two stages. Firms with negative assets, sales and equity were excluded in stage one. Significant outliers were excluded in stage two. The original sample of supported enterprises contained 772 firms. The enterprises had mean assets of €273,414 (Table 1). The average increase in assets was 1.806 times between the periods 2016–2017 and 2019. The increase in assets was our dependent variable in further computations. The dependent variable had a very high standard deviation (5.782) (Table 1). The sample was quite diverse and included firms with very low assets. A couple of small firms provided for substantial diversity in a relative change in assets between 2016–2017 and 2019. The lowest ratio for an increase in assets was 0.031, while the highest one was 149.881 (Table 1). We screened the data for outliers. The interquartile range was used to identify outliers in the dependent variable. The lower bound was set to (Q1 - 1.5*IQR), while the upper bound was set to (Q3 + 1.5*IQR). All observations outside of the lower and upper bounds were excluded from further analysis. The initial sample of 772 firms was reduced to a final sample of 454 firms (Table 1). The minimum increase in assets was 0.440, while the maximum one was 2.103. The respective standard deviation decreased to 0.377 after data cleaning.

Table 1: Descriptive statistics (authors' computations)

to	*Ratio assets 19/16-17*	*Assets 16-17 (€)*	*Sales 16-17 (€)*	*Ratio assets 19/16-17*	*Assets 16-17 (€)*	*Sales 16-17 (€)*
	initial sample, N = 772			final sample, N = 454		
Mean	1.806	273,414	224,094	1.177	324,853	288,718
Median	1.205	68,258	58,553	1.136	78,419	70,970
Std. Dev.	5.782	632 352	519,341	0.377	736,809	616,884
Minimum	0.031	3,052	81	0.440	3,802	81
Maximum	149.881	7,390,593	4,964,185	2.103	7,390,593	4,964,185
Q1	0.895	24,338	239,89	0.891	275,79	28,150
Q2	1.743	235,734	171,896	1.428	294,977	240,016

Figure following on the next page

Figure 1: Regional disparities in Slovakia (79 districts)



Proportion of population in material deprivation (%)

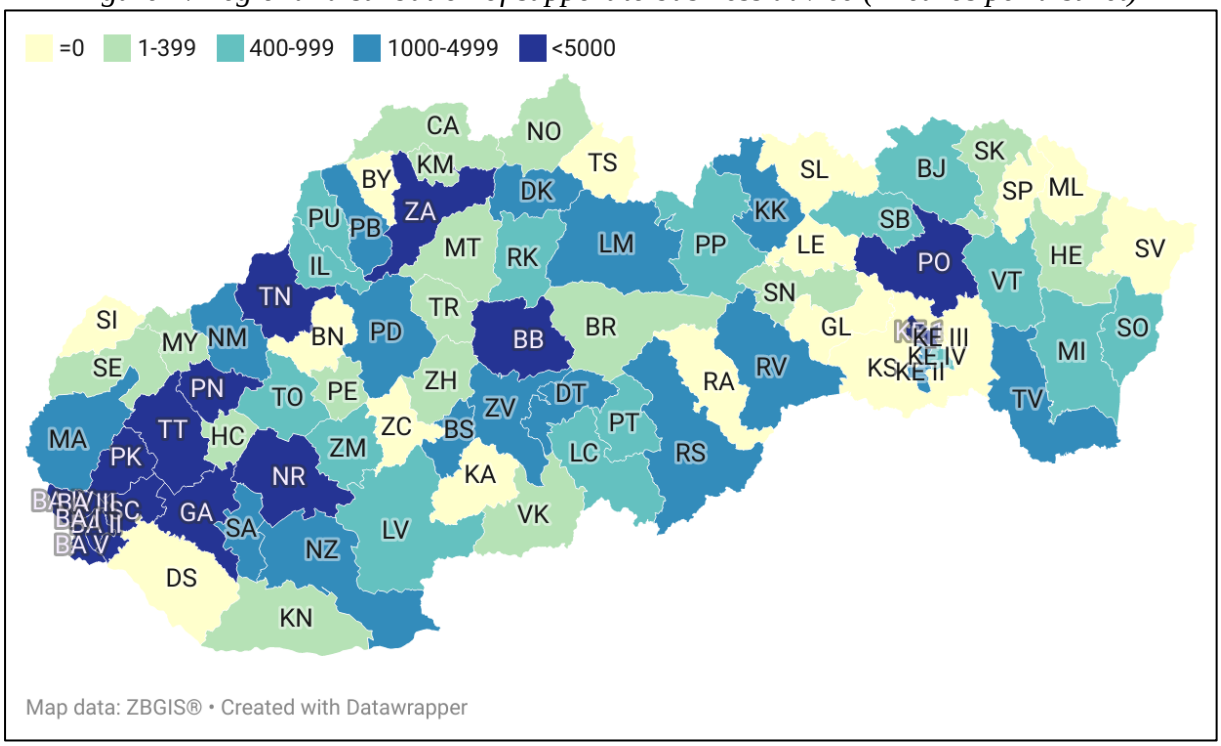
Proportion of adult population with tertiary education (%)

Enterprise density per 1,000 population

Unemployment rate (%)

Note: A complete list of Slovak districts, their official codes, as well as information on areas and populations can be found here: http://www.statoids.com/ysk.html.

Figure 2: Regional distribution of support to business advice (in euros per district)



Note: A complete list of Slovak districts, their official codes, as well as information on areas and populations can be found here: http://www.statoids.com/ysk.html.

3. METHODS

The aim of our research was to analyse the potential impact of regional correlates on the efficiency of business advice. The research specified three time periods: (i) pre-intervention period, (ii) intervention period, and (iii) post-intervention period. The choice of periods was informed by the course of programme implementation and the data availability. Most of the 4,411 supported companies received advisory services in 2019 and 2020. The economic performance of the Slovak SMEs, unfortunately, was substantially impacted by the COVID-19 pandemic in 2020. We therefore used 2019 annual accounts (the last standard year before the pandemic) for data on the post-intervention period. The year 2018 was considered the intervention period. We were able to use data on the 772 companies supported in 2018. Data from annual accounts in 2016–2017 were compared with those from 2019 accounts. As for the pre-intervention period, we averaged the data for 2016 and 2017 so as to smooth random fluctuations in companies' data. We combined factor and regression analyses in order to establish the potential impact of regional correlates on the efficiency of business advice.

3.1. Factor analysis

Some independent variables were highly correlated. The respective Pearson correlation coefficients, for example, for the unemployment rate (on the one hand) and the share of the population living in material deprivation and the share of the Roma population (on the other hand) were 0.966 and 0.908. We applied factor analysis in order to mitigate the potential risk of multicollinearity.

A vector of 11 regional variables was computed for the 79 Slovak districts (LAU-1 level):

1) enterprises per 1,000 population (enterprise density);
2) foreign enterprises per 1,000 population;
3) spending by the European Structural and Investment Funds (ESIF) on demand-driven projects, EUR per inhabitant;
4) proportion of adult population with tertiary education, %;
5) average wage, EUR;
6) proportion of urban population, %;
7) proportion of Roma population in total population;
8) proportion of population in material deprivation, %;
9) unemployment rate, %;
10) proportion of early school leavers in total school leavers, %;
11) distance of district capital to Bratislava, km.

The variable on the adult population with tertiary education refers to 2011. The share of the Roma population in the total population refers to 2013. All other variables are averages for 2016 and 2017. The factor analysis reduced the original 11 input variables into two meaningful factors (Table 2).

Factor 1 explained 43.248% and factor 2 41.698% of variance in the total variance:

- Factor 1: 'Development' covers the overall developmental level of a district with regard to overall and foreign enterprise density, urbanisation rates, educational levels, wage levels, and ESIF spending (Table 3);
- Factor 2: 'Poverty' includes variables representing material deprivation rates, the proportion of the marginalised Roma population in relation to the total population, unemployment rates, peripheral locations, and the performance of the regional educational system (Table 3).

Table 2: Total variance explained (authors' computations)

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.818	61.982	61.982	4.757	43.248	43.248
2	2.526	22.964	84.946	4.587	41.698	84.946

Notes: Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.821; Bartlett's Test of Sphericity Approx. Chi-Square: 10273.308; df: 55; Sig. 0.000,

Table 3: Factor analysis for regional correlates of economic performance (authors' computations)

	Component	
	1	***2***
enterprises per 1000 population	**0.967**	-0.139
foreign enterprises per 1000 population	**0.964**	-0.079
ESIF spending on demand-driven projects, per EUR inhabitant	**0.916**	0.010
proportion of adult population with tertiary education	**0.800**	-0.440
average wage, EUR;	**0.779**	-0.476
proportion of urban population, %;	**0.663**	-0.478
proportion of Roma population in total population	-0.059	**0.967**
proportion of population in material deprivation, %	-0.212	**0.959**
unemployment rate, %	-0.222	**0.937**
proportion of early school leavers in total school leavers, %	-0.162	**0.916**
distance of district capital to Bratislava, km	-0.492	**0.584**

3.2. Regression analysis

The factor scores for factors 1 and 2 were the explanatory variables for ordinary least squares (OLS) regression. Furthermore, we used control variables on enterprise age, technology intensity1, and industry of business. Enterprise age was a proxy for the in-house expertise of the SME manager. Participating firms vastly differed in their asset sizes and the amount of support. We therefore expressed the support size in relative terms (support to asset ratio). Only two out of a total of six variables became significant at the 0.1 level, i.e. enterprise age (p = 0.081) and relative support (p = 0.059). All other variables, including the factor scores for factors 1 ('Development') and 2 ('Poverty'), were insignificant. The OLS results provide some support for Hypothesis 1, albeit none for Hypothesis 2. If age is a proxy for in-house expertise, then our findings gave some credit to assumptions on the relation between in-house expertise and economic performance. The overall R-squared \ (0.006) is very low. The result is unsurprising: the ratio of the median value of support (€400) to the median firm assets (€78,419) is 0.005 (half of a percentage point). It is not realistic to expect substantial effects from fairly low support. In fact, the R-squared is commensurable with the intensity of support.

Table following on the next page

[1] There are six technology classes of enterprises at the NACE two-digit level: low-tech manufacturing (NACE 10–18, 31, 32), medium-low-tech manufacturing (NACE 19, 22–25, 33), medium-high-tech manufacturing (NACE 20, 27–30), high-tech manufacturing (NACE 21 and 26), less knowledge-intensive services (NACE 45–47, 49, 52, 53, 55, 56, 68, 77, 79, 81, 82, 94–99), and knowledge-intensive services (NACE 50, 51, 58–66, 69–75, 78, 80, 84–93). Source: Eurostat 2018.

Table 4: Linear regression for regional correlates of economic performance (authors' computations)

	Unstandardized Coefficients		*Standardized Coefficients*	*t*	*Sig.*
	B	*Std. Error*	*Beta*		
knowledge intensity	0.014	0.019	0.037	0.760	0.448
industry	-0.001	0.001	-0.038	-0.587	0.558
age of enterprise in years	-0.005	0.003	-0.083	-1.750	0.081
relative support to assets	1.136	0.600	0.090	1.893	0.059
Factor 1 'Development'	-0.006	0.023	-0.016	-0.259	0.796
Factor 2 'Poverty'	0.003	0.019	0.008	0.157	0.875
R = 0.138; R Square = 0.019; Adjusted R Square = 0.006 *Std. Error of the Estimate=0.376*					

4. CONCLUSIONS

4.1. Key findings

This paper analysed the efficiency of support to business advice. We introduced a high number of regional correlates in order to uncover their potential mediating effects on the efficiency of business advice. No significant effect was found. The efficiency of business advice on change in assets seemed to be unrelated to regional milieus. Our research complements findings from related literature that low-cost advice has a limited impact on improvement in business performance (OECD 2007; WWC 2016; Cravo and Piza 2019; Mole et al. 2011; Cumming and Fischer 2012). We found some, albeit weak, support to claim that the efficiency of business advice on improved economic performance related to the support size (Mole et al. 2011; Bruhn et al. 2018). The variable on support intensity (relative to assets) was significant at the 0.1 level. The overall effect size (0.6%), however, was too low to generate meaningful results.

4.2. Limitations

Our research has some notable limitations. The sample size (N = 454) was rather small. All data refer to enterprises supported in 2019. Most support to business advice was disbursed in 2020 and 2021. We do not claim to have a representative sample of Slovak enterprises. Both intervention (2018) and post-intervention (2019) periods were limited to one year only. We were not able to analyse the long-term effects of business advice on the economic performance of supported enterprises.

4.3. Directions for further research

Future research would, undoubtedly, benefit from large samples and longer time periods. Some effects of the business advice dissipate quickly over time, while some may take longer time periods to materialise. We hope to re-examine companies' financial accounts after two or more years and re-run our computations. This research focused on the potential impact of regional correlates on the economic performance of supported businesses. The research did not compare the performance of supported versus unsupported firms. A counterfactual analysis — comparing supported and unsupported enterprises — is another promising option for establishing the efficiency of business advice on economic performance. The propensity score matching (PSM) technique with logistic regression is used to construct treatment and control groups. The PSM procedure may include a number of matching variables, including regional correlates. If the sample sizes are sufficiently large, separate counterfactual analyses could be performed for specific NUTS 2 and NUTS 3 regions.

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LITERATURE:

1. Bennett, R. and Robson, P. (2003): Changing Use of External Business Advice and Government Supports by SMEs in the 1990s. *Regional Studies*, 37(8), 795–811.
2. Benus, J., Shen, T., Zhang, S., Chan, M., and Hansen, B. (2009): *Growing America through entrepreneurship: Final evaluation of Project GATE*. Washington, DC: IMPAQ International.
3. Bruhn, M., Karlan, D.S., and Schoar, A. (2018): The Impact of Consulting Services on Small and Medium Enterprises: Evidence from a Randomized Trial in Mexico. *Journal of Political Economy*, 126(2): 635–687.
4. Chatterji, A., Delecourt, S., Hasan, S. and Koning, R. (2019): When Does Advice Impact Startup Performance? *Strategic Management Journal*, 40(3): 331–356. DOI: 10.1002/smj.2987.
5. Cravo, T.A, and Piza, C. (2019). The impact of business-support services on firm performance: a meta-analysis. *Small Business Economics*, 53(3), 753–770.
6. Cumming, D.J., and Fischer, E. (2012): Publicly Funded Business Advisory Services and Entrepreneurial Outcomes. *Research Policy* 41(2): 467–481.
7. Eurostat (2018): Glossary: High-tech classification of manufacturing industries. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:High-tech_classification_of_manufacturing_industries , accessed on 3rd September 2021
8. Eurostat (2021): Gross domestic product (GDP) at current market prices by NUTS 3 regions [nama_10r_3gdp].
9. Fairlie, R.W., Karlan, D., and Zinman, J. (2015): Behind the GATE Experiment: Evidence on Effects of and Rationales for Subsidized Entrepreneurship Training. *American Economic Journal: Economic Policy*, 7(2): 125–161.
10. Johnson, S., Webber, D., & Thomas, W. (2007). Which SMEs Use External Business Advice? A Multivariate Subregional Study. *Environment and Planning A*, 39(8), 19811997.
11. Kösters, S. and Obschonka, M. (2011): Public business advice in the founding process: an empirical evaluation of subjective and economic effects. *Environment and Planning C*, 29(4): 577–604.
12. Kuhn, K.M., Galloway, T.L. and Collins-Williams, M. (2017): Simply the best: An exploration of advice that small business owners value. *Journal of Business Venturing Insights*, 8: 33-40.
13. McKenzie, D. and Woodruff, C. (2014): What Are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World? *The World Bank Research Observer*, 29(1): 48-82.
14. Mole, K.F., Hart, M., Roper, S., and Saal, D.S. (2011): Broader or deeper? Exploring the most effective intervention profile for public small business support. *Environment and Planning A*, 43(1): 87–105.
15. Oberschachtsiek, D. and Scioch, P. (2015): The outcome of coaching and training for self-employment. A statistical evaluation of outside assistance support programs for unemployed business founders in Germany. *Journal of Labour Market Research*, 48(1): 1–25.
16. OECD (2007): OECD Framework for the Evaluation of SME and Entrepreneurship Policies and Programmes, OECD: Paris.
17. Pergelova, A. and & Angulo-Ruiz. F. (2014) The impact of government financial support on the performance of new firms: the role of competitive advantage as an intermediate outcome, Entrepreneurship & Regional Development, 26:(9-10), 663–705.
18. Sawang, S., Parker, P., and Hine, D. (2016): How Small Business Advisory Program Delivery Methods (Collective Learning, Tailored, and Practice-Based Approaches) Affect Learning and Innovation. *Journal of Small Business Management*. 54(1): 244–261.

19. WWC, What Works Centre (2016): *Evidence Review 2 Business Advice.* What Works Centre for Local Economic Growth. London.

IMPACT OF TRANSFORMATIONAL LEADERSHIP ON INNOVATIVE WORK BEHAVIOR THROUGH LEADER-MEMBER EXCHANGE AND PSYCHOLOGICAL EMPOWERMENT: MODERATING ROLE OF KNOWLEDGE SHARING

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ABSTRACT

The purpose of this conceptual study is to provide a theoretical model to find the impact of transformational leadership on innovative work behavior of employees and to test the mediation of leader-member exchange and psychological empowerment in the hospitality sector of Pakistan. This study also proposes the moderation of knowledge sharing behavior, firstly, between the relationship of leader-member exchange and innovative work behavior and secondly, between the relationship of psychological empowerment and innovative work behavior. Field survey will be applied and data will be collected through structured questionnaire from 400 frontline managers working in 3-star hotels in Pakistan. For testing the validity and reliability of the instrument and various relational hypotheses, the study will apply partial least square based structural equation modeling (PLS – SEM) with Smart PLS software. Based on the different results of mediation and moderation in the model, the study will suggest various strategies to the hotel industry of Pakistan that how they can boost the innovative work behavior of their employees. The findings of the study will not only be helpful for the hospitality industry but they can be helpful for the other sectors and may be generalized on various settings if the future researchers replicate the same model in different contexts. So, the findings of this study will contribute the practical as well as theoretical implications.

Keywords: *Transformational leadership, innovative work behavior, leader-member exchange, psychological empowerment, knowledge sharing behavior*

1. INTRODUCTION

Transformational leadership (TL) has resulted in more beneficial improvements and innovations in the hotel sector than a servant and authentic leadership (Wang, Xu, Sun, & Liu, 2019). Furthermore, it is the most researched leadership style in the literature review as some researchers evidenced by using TL as a social change in an environment (Antonakis & House, 2014; Nguni, Sleegers, & Denessen, 2006) There is substantial evidence that followers are more productive to the company, regardless of whether their success is assessed at the unit, firm, individual, or team levels (Buil, Martínez, & Matute, 2019). Employee' performance is one of the basic characteristics, along with financial and environmental dimensions, that companies are now striving towards to ensure organizational sustainability and innovativeness (Fabio & Peiró, 2018; Florea, Cheung, & Herndon, 2013). Unfortunately, this interpersonal component has received less attention in organizational sustainability than the economic and environmental aspects (Florea, Cheung & Herndon, 2013). However, the significant monetary consequences of a variety of work-related employee behaviors necessitate a special focus on testing organizational sustainability via this human component.

As a consequence, management academics and social practitioners have seen an increase in the higher need to test organizational sustainability during the past century. Fascinatingly, innovative work behavior (I.W.B) is proved to be an important worker' outcome that is highly linked to the personal expertise to guarantee organizational longevity. Management academics and practitioners place a high value on utilizing the behavioral term: creative work behavior to achieve organizational aims and long-term tactics (Kneipp, da Rosa, Bichueti, Perlin, & Júnior, 2011) and to confirm organizational sustainability in a competitive context. Similarly, regardless of empirical evidence and advancement, organizational operating in the most competitive environment also requires I.W.B in other aspects of organizational goals (Lee, 2005; Schermuly, Meyer, & Dämmer, 2013), concerning exploring new methods that are effective to meet consumer demands (Chowhan, Pries, & Mann, 2017). This research is particularly designed to measure the innovative behavior of frontline workers of the hospitality industry in Pakistan. Therefore, it tests the leaders motivations toward hotel' workers and the study practices a transformational leadership (TL) style because TL is a strategic leadership style that assists leaders in transforming their positive conduct, mental stimulation, and encouragement into improving workers' I.W.B (Bass & Riggio, 2010). Literature research has practiced TL style to strengthen innovative behavior. However, TL indirectly affects I.W.B that was investigated through the use of multiple mediating mechanisms as job crafting in the study of Afsar et al. (2019), trust of leader in the study of Li et al. (Li et al., 2019). Unfortunately, leader-member exchange (L.M.X) and psychological empowerment (PSEM) were also not found in an integrated model in the previous study to facilitate TL for the employee innovativeness. Moreover, no study was also found to have the moderating role of K.S.B over both L.M.X and psychological empowerment; and I.W.B. The mediating mechanism was not previously explored to sound the system of innovativeness among the employees. Surprisingly, no research has discovered one of the most important facilitators of L.M.X and psychological empowerment to I.W.B. Li et al. propose that L.M.X and PSEM should be studied as possible mediator to make an individual's capacity sound enough to demonstrate creativity as well (Li et al., 2019). Almulhim (2020) reported that psychological empowerment with K.S.B influences I.W.B. They specifically propose that future studies may capture an employee's management of innovation. Following the preceding idea, this study analyses social exchange mediating mechanisms (Liang, Farh, & Farh, 2012) which also suggests that knowledge sharing behavior (K.S.B) may moderate the relationship between TL and I.W.B, such as L.M.X and PSEM to assess individual creativity in inventions. Previous research has investigated the moderating function of K.S.B with TL to I.W.B (Afsar, 2019). Therefore, the study measures the direct and indirect effect of transformational leadership on innovative work behavior via a mediating role of L.MX and PSEM while, it will also measure the moderating role of K.S.B over I.W.B through both L.M.X and PSEM in the hospitality industry of Pakistan.

2. LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

2.1. Transformational Leadership and Innovative Work Behavior

The basic purpose of TL is to change values and ethics, which improves individual appraisal (Afsar, 2019) as well as, it encourages employees to contemplate open-air organizational paradigms and excites entities' thinking, resulting in higher commitment to complete organizational tasks effectively (Li et al., 2019). TL also encourages employees' working behavior (Wang et al., 2019), which may improve intellectual skills and interpersonal capacity (Afsar, 2019). TL immediately empowers workers to think positively and make autonomous choices to improve their procedural and energetic control (Li et al., 2019), promotes corporate culture, and encourages employees' I.W.B (Afsar, 2019).

However, recent research provides a sliver of empirical proof that TL affects I.W.B (Li e,t al. 2019) because it causes a positive shift in human psychology, which leads to innovativeness (Afsar, 2019). This study offers research hypotheses based on the preceding discussion.

- ***H1:*** Transformational leadership significantly affects innovative work behavior

2.2. The Mediation of Leader-Member Exchange between Transformational Leadership, and Innovative Work Behavior

L.M.X is a supervisor-subordinate interaction that is essential for idea sharing (Jyoti & Bhau, 2015). This connection is based on human traits and the many dyads that exist between supervisor-subordinate relationships (Jyoti & Bhau, 2015) As a result, SET examines this interaction between supervisors and their employees directly (Li et al., 2019). L.M.X strengthens the connection between leadership and subordinates since it is a powerful bonding in which leaders decided to establish contact with followers and participate in social ++value exchange (Afsar, 2019). By establishing a social exchange environment, a more appropriate system of social exchange may promote the interchange of ideas, concepts, and social values. As a result, SET supports the idea that followers/subordinates are more likely to participate in social exchanges if a genuine system of leader-member interaction is given (Erdogan, Kraimer and Liden, 2002). By focusing on 210 followers and 38 supervisors at grocery stores in the United States, the researchers offer evidence that Erdogan and Enders (2007) supported the substantial impact of L.M.X on employee performance. A high social exchange system allows a strong connection with I.W.B (Scott & Bruce, 1994) because highly affected subordinates favorably contribute to inventing methods of doing things (Jyoti & Bhau, 2015). Leader-member interaction is linked to follower innovation in a good way (Afsar, 2019). As a result of the high quality of the L.M.X relationship with transformational leaders, work experiences and innovations are influenced (Li et al., 2019), so work innovativeness and I.W.B are the high-quality outcomes of the supervisor-subordinate relationship (leader-member exchange). Furthermore, Nazir et al. (2020) agreed that L.M.X was shown to be a mediated connection between paternalistic leadership and I.W.B (Nazir, Shafi, Asadullah, Qun, & Khadim, 2020), although they recommended adopting a different leadership style. The paper offers a research hypothesis based on SET and fragments of evidence:

- ***H2:*** Transformational leadership indirectly and significantly affects innovative work behavior via a mediation of leader-member exchange.

2.3. The Mediation of Psychological Empowerment between Transformational Leadership and Innovative Work Behavior

Lei (2019) identified psychological empowerment as a possible enhancer of transformational leadership effects and discovered that transformational leadership influences individual job outcomes via empowerment (Li et al., 2019). By offering a complete motivating framework, psychological empowerment explains the connections between transformational leadership and employee job-related behaviors (Joo & Lim, 2013). Employees who are inspired by TL leaders experience creativity and innovation because they understand what the company expects of them and are more prepared to match their abilities and behaviors to these demands, performance results, and expectations. They have a greater feeling of mastery and identity over their jobs and workplaces. Employees that are given more autonomy and decision-making power are more likely to reciprocate with higher levels of employee creative involvement (Zhang & Bartol, 2010). Besides, TL leaders promote information dissemination (Harborne & Johne, 2003), give difficult tasks (De Jong & Den Hartog, 2007), and stimulate mental stimulation (Jung, 2003), which are all associated with increased creativity and I.W.B.

This leadership style trains workers to take on greater responsibility and strengthens their views about their ability to execute activities and complete tasks with originality and inventiveness (Morales et al., 2008). Such leaders are concerned with their workers' feeling of achievement, which is anticipated to boost their employees' innovativeness. Employees exhibited creativity and innovation when working in a high-task autonomy workplace environment with repeated discussion, personality and control, and delegation, according to the findings of Dvir et al. (2002) (Dvir, Eden, Avolio, & Shamir, 2002). Based on the evidences, the study proposes the research hypothesis:

- ***H3:*** Transformational leadership indirectly and significantly affects innovative work behavior via a mediation of psychological empowerment.

2.4. The moderation of Knowledge Sharing Behavior

According to Li et al. (2019, p. 14), K.S.B would be an effective mediation mechanism between leader' behavior and employee' I.W.B. Similarly, K.S.B encourages followers to convert their knowledge reservoir into useful assets for making breakthroughs (Rawung, Wuryaningrat, & Elvinita, 2015). K.S.B is more than simply an exchange of ideas; it requires appropriate exchange of knowledge and ideas to develop methods and make followers creative (Verona, Prandelli, & Sawhney, 2006) since TL can help followers share more and more knowledge. Noruzy et al. (2013) performed research in Iran with 106 executive-level officials and found that TL affects I.W.B both directly and indirectly via the mediating function of knowledge management (Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, & Rezazadeh, 2013). They went on to say that if a leader behaves in a transformative manner and encourages followers to share information, I.W.B may be encouraged and acquired. Afsar et al. (2019) agreed that K.S.B moderates the connection between TL and I.W.B, but suggested that K.S.B may be found more creative when leaders and subordinates get together and participate in exchange of ideas (L.M.X). TL encourages followers to share their expertise, and as a result, they are more likely, to sum up, I.W.B and create innovations. Verona et al. (2006) argued in support of the notion that I.W.B is the result of knowledge sharing activity (Rahi & Abd. Ghani, 2019a; Verona et al., 2006). In this manner, K.S.B raises followers' awareness of current problems and concerns. As a result of their K.S.B, followers are becoming innovative at work. The researchers asserted that followers working in exchanges' environment would result in good knowledge transfer, which would lead to workplace innovations (Choi et al., 2016), and they supported the moderating role of K.S.B between L.M.X and innovations such as product and process innovation. According to Li et al. (2019), I.W.B is the result of a knowledge-sharing activity. On the other hand, Almulhim (2020) reported that psychological empowerment is not the ultimate predictor of I.W.B and it is followed by a set of psychological behaviors (e.g., K.S.B) (Almuhim, 2020). He found the moderating role of psychological empowerment between K.S.B and I.W.B and suggested to examine the relationship between psychological empowerment and I.W.B via creative and knowledge competencies (e.g., K.S.B). As well, Lei (2019) was in line with the notion that psychological empowerment plays influential role in creating I.W.B (Li et al., 2019) however, psychological empowerment with knowledgeable ideas (e.g., K.S.B) may have high indirect effect on I.W.B (Joo & Lim, 2013). It might be possible if empowering knowledge management would highly affect innovative ideas (e.g., I.W.B) (Zhang & Bartol, 2010) therefore, the study examines the moderating role of K.S.B whether it moderates the relationship between psychological empowerment and I.W.B. The study offers the research hypotheses based on fragments of information from the literature:

- ***H4:*** Leader-member exchange indirectly and significantly affects innovative work behavior via a moderation of knowledge sharing behavior

- ***H5:*** Psychological empowerment indirectly and significantly affects innovative work behavior via a moderation of knowledge sharing behavior

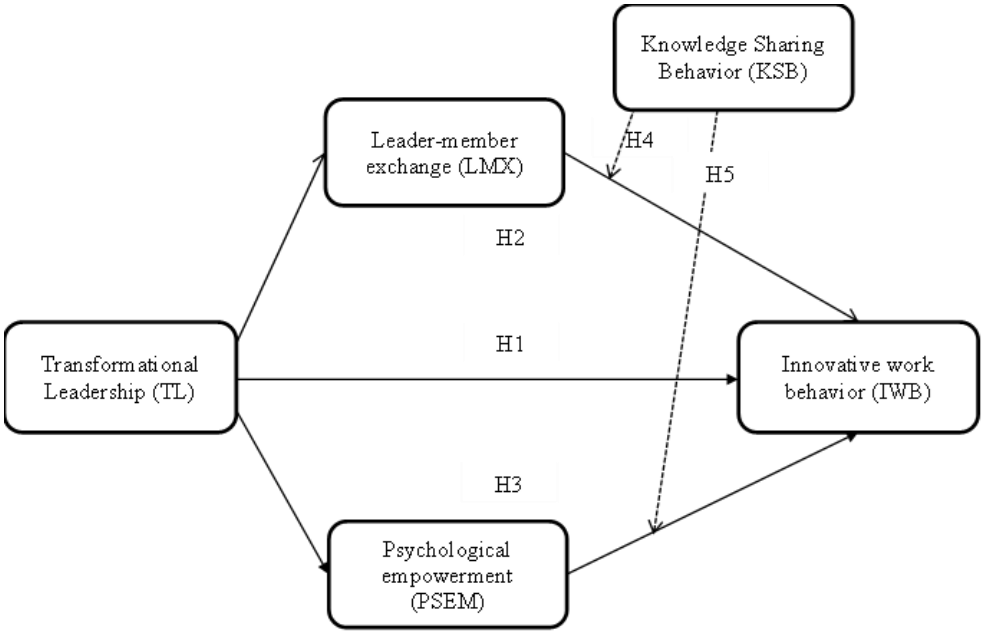

Figure 1: Theoretical Model

3. RESEARCH METHODOLOGY

3.1. Data Collection

According to the researchers, 3-star hotels are cutting down owing to a lack of finances and the novelty of hotel personnel, such as front-line employees (Kaushal & Srivastava, 2021; Rahi, Khan, & Alghizzawi, 2021). Because three-star hotels and their front-line staff normally have less creative environment and opportunities as compare to four and five-star hotels; therefore, Bashir (2013) suggests that evaluation of 3-star hotels and their culture is more important. This is the reason that the present study will examine the impact of various stimuli which influence the employee innovative behavior e.g., transformational leadership, leader-member exchange, psychological empowerment and knowledge sharing behavior. The list of the 3-star hotels will be obtained from the Pakistan Hotel Association (http://www.pha.org.pk/) for the collection of data. The survey questionnaires will be sent to 400 front line managers, which is a respectable sample (Lingard & Rowlinson, 2006; Rahi, Othman Mansour, Alharafsheh, & Alghizzawi, 2021).

3.2. Measurement Scales

The present study will apply a 7-item internationally established TL scale developed in the study of Carless (Carless & Alexander; Rahi, Abd.Ghani, & Hafaz Ngah, 2019; Rahi, Ishtiaq, Farooq, & Alnaser, 2021; Samar & Mazuri, 2019), which was further suggested by Buil, Martnez, and Matute (2019), and confirm the reliability through a Cronbach alpha of 0.967 for the TL. L.M.X will be measured using the standard 7-item scale of Graen and Bien (1995) and scored. Similarly, a 6-item scale of K.S.B developed by Afsar et al. (2019), will be applied while a 12-item psychological empowerment scale of Spreitzer will be adapted, suggested by Afsar et al. (2019), and in the same lines, a 6-item scale of I.W.B will be adapted from the research of Terblanche (Kneipp et al., 2011; Rahi, Abd.Ghani, et al., 2019; Rahi, Ghani, & Ngah, 2020; Rahi, Khan, & Alghizzawi, 2020; Rahi, Othman Mansour Majeed, Alghizzawi, & Alnaser Feras, 2019). In the research, all survey questionnaire questions were graded on a 5-point Likert scale (e.g., 1=strongly disagree to 5=strongly agree).

3.3. Data Analysis

The current research will apply partial least square based structural equation modeling (PLS – SEM) using Smart PLS 3 for testing the validity and reliability of the instrument and various relational hypotheses. This approach is appropriate for exploratory studies in which novel connections are being explored (Hair, Risher, Sarstedt, & Ringle, 2019; Rahi & Abd.Ghani, 2019; Rahi, Ghani, & Ngah, 2018). In the first stage of analysis, the validity and reliability of the different constructs will be tested through PLS algorithm while in the second stage, PLS bootstrapping will be applied to test the relationship model of the study (Hair et al., 2019; Rahi & Abd. Ghani, 2019b). Since the study has mediating relationships, thus, the different direct and indirect relationships will be assessed. PLS technique is suitable for testing the existing theories and exploring the new extensions of the existing theories (Rahi & Abd. Ghani, 2019c; Rahi, Ghani, Alnaser, & Ngah, 2018; Roldán, 2012). Similarly, partial least square modeling is useful in multi-regression analyses and evaluating the mediating connection with total effects (Hair et al., 2019).

LITERATURE:

1. Afsar, B. (2019). *Transformational leadership and innovative work behavior*. Paper presented at the Academy of Management Proceedings.
2. Almuhim, A. F. (2020). Linking knowledge sharing to innovative work behaviour: the role of psychological empowerment. *The Journal of Asian Finance, Economics, and Business, 7*(9), 549-560.
3. Antonakis, J., & House, R. J. (2014). Instrumental leadership: Measurement and extension of transformational–transactional leadership theory. *The Leadership Quarterly, 25*(4), 746-771.
4. Bass, B. M., & Riggio, R. E. (2010). The transformational model of leadership. *Leading organizations: Perspectives for a new era, 2*, 76-86.
5. Buil, I., Martínez, E., & Matute, J. (2019). Transformational leadership and employee performance: The role of identification, engagement and proactive personality. *International Journal of Hospitality Management, 77*, 64-75.
6. Carless, S. A., & Alexander, J. Wearing, and Leon Mann. 2000.“. *A Short Measure of Transformational*.
7. Chowhan, J., Pries, F., & Mann, S. (2017). Persistent innovation and the role of human resource management practices, work organization, and strategy. *Journal of Management & Organization, 23*(3), 456-471.
8. De Jong, J. P., & Den Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of innovation management*.
9. Dvir, T., Eden, D., Avolio, B. J., & Shamir, B. (2002). Impact of transformational leadership on follower development and performance: A field experiment. *Academy of management journal, 45*(4), 735-744.
10. Fabio, A. D., & Peiró, J. M. a. (2018). Human Capital Sustainability Leadership to Promote Sustainable Development and Healthy Organizations: A New Scale. *Sustainability, 10*(7), 1-11.
11. Florea, L., Cheung, Y. H., & Herndon, N. C. (2013). For all good reasons: Role of values in organizational sustainability. *Journal of business ethics, 114*(3), 393-408.
12. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*.
13. Harborne, P., & Johne, A. (2003). Creating a project climate for successful product innovation. *European Journal of innovation management*.

14. Joo, B.-K., & Lim, T. (2013). Transformational leadership and career satisfaction: The mediating role of psychological empowerment. *Journal of Leadership & Organizational Studies, 20*(3), 316-326.
15. Jung, A. P. (2003). The impact of resistance training on distance running performance. *Sports Medicine, 33*(7), 539-552.
16. Jyoti, J., & Bhau, S. (2015). TRANSFORMATIONAL LEADERSHIP AND JOB PERFORMANCE: A STUDY OF HIGHER EDUCATION. *Journal of Services Research, 15*(2).
17. Kaushal, V., & Srivastava, S. (2021). Covid-19: Ivermectins politicisation is a warning sign for doctors turning to orphan treatments.
18. Kneipp, J. M., da Rosa, L. A. B., Bichueti, R. S., Perlin, A. P., & Júnior, V. F. S. (2011). Uma análise da evolução da produção científica sobre inovação no Brasil. *Revista Eletrônica de Estratégia & Negócios, 4*(1), 133-157.
19. Lee, J. (2005). Effects of leadership and leader-member exchange on commitment. *Leadership & organization development journal*.
20. Li, H., Sajjad, N., Wang, Q., Muhammad Ali, A., Khaqan, Z., & Amina, S. (2019). Influence of transformational leadership on employees' innovative work behavior in sustainable organizations: Test of mediation and moderation processes. *Sustainability, 11*(6), 1594.
21. Liang, J., Farh, C. I., & Farh, J.-L. (2012). Psychological antecedents of promotive and prohibitive voice: A two-wave examination. *Academy of Management journal, 55*(1), 71-92.
22. Lingard, H. C., & Rowlinson, S. (2006). Sample size in factor analysis: why size matters. *Retrieved in data, 3*, 01-12.
23. Nazir, S., Shafi, A., Asadullah, M. A., Qun, W., & Khadim, S. (2020). Linking paternalistic leadership to follower's innovative work behavior: the influence of leader–member exchange and employee voice. *European Journal of Innovation Management*.
24. Nguni, S., Sleegers, P., & Denessen, E. (2006). Transformational and transactional leadership effects on teachers' job satisfaction, organizational commitment, and organizational citizenship behavior in primary schools: The Tanzanian case. *School effectiveness and school improvement, 17*(2), 145-177.
25. Noruzy, A., Dalfard, V. M., Azhdari, B., Nazari-Shirkouhi, S., & Rezazadeh, A. (2013). Relations between transformational leadership, organizational learning, knowledge management, organizational innovation, and organizational performance: an empirical investigation of manufacturing firms. *The International Journal of Advanced Manufacturing Technology, 64*(5-8), 1073-1085.
26. Rahi, S., & Abd. Ghani, M. (2019a). Does gamified elements influence on user's intention to adopt and intention to recommend internet banking? *International Journal of Information and Learning Technology, 36*(1), 2-20. doi: doi:10.1108/IJILT-05-2018-0045
27. Rahi, S., & Abd. Ghani, M. (2019b). Integration of expectation confirmation theory and self-determination theory in internet banking continuance intention. *Journal of Science and Technology Policy Management, 10*(3), 533-550. doi: 10.1108/jstpm-06-2018-0057
28. Rahi, S., & Abd. Ghani, M. (2019c). Investigating the role of UTAUT and e-service quality in internet banking adoption setting. *The TQM Journal, 31*(3), 491-506.
29. Rahi, S., & Abd.Ghani, M. (2019). Integration of DeLone and McLean and self-determination theory in internet banking continuance intention context. *International Journal of Accounting & Information Management, 27*(3), 512-528. doi: 10.1108/ijaim-07-2018-0077

30. Rahi, S., Abd.Ghani, M., & Hafaz Ngah, A. (2019). Integration of unified theory of acceptance and use of technology in internet banking adoption setting: Evidence from Pakistan. *Technology in Society, 58*, 101120. doi: https://doi.org/10.1016/j.techsoc.2019.03.003
31. Rahi, S., Ghani, M., Alnaser, F., & Ngah, A. (2018). Investigating the role of unified theory of acceptance and use of technology (UTAUT) in internet banking adoption context. *Management Science Letters, 8*(3), 173-186.
32. Rahi, S., Ghani, M., & Ngah, A. (2018). A structural equation model for evaluating user's intention to adopt internet banking and intention to recommend technology. *Accounting, 4*(4), 139-152.
33. Rahi, S., Ghani, M. A., & Ngah, A. H. (2020). Factors propelling the adoption of internet banking: the role of e-customer service, website design, brand image and customer satisfaction. *International Journal of Business Information Systems, 33*(4), 549-569. doi: 10.1504/ijbis.2020.105870
34. Rahi, S., Ishtiaq, M., Farooq, W., & Alnaser, F. (2021). *EXAMINING FACTORS INFLUENCE INDIVIDUAL BEHAVIOUR TO CONTINUE USE OF MOBILE SHOPPING APPS WITH THE INTEGRATION OF TECHNOLOGY ACCEPTANCE MODEL AND BRAND AWARENESS.* Paper presented at the Economic and Social Development (Book of Proceedings), 7th ITEM Conference-" Innovation, Technology, Education and.
35. Rahi, S., Khan, M. M., & Alghizzawi, M. (2020). Extension of technology continuance theory (TCT) with task technology fit (TTF) in the context of Internet banking user continuance intention. *International Journal of Quality & Reliability Management, 38*(4), 986-1004. doi: 10.1108/ijqrm-03-2020-0074
36. Rahi, S., Khan, M. M., & Alghizzawi, M. (2021). Factors influencing the adoption of telemedicine health services during COVID-19 pandemic crisis: an integrative research model. *Enterprise Information Systems, 15*(6), 769-793. doi: 10.1080/17517575.2020.1850872
37. Rahi, S., Othman Mansour Majeed, M., Alghizzawi, M., & Alnaser Feras, M. (2019). Integration of UTAUT model in internet banking adoption context: The mediating role of performance expectancy and effort expectancy. *Journal of Research in Interactive Marketing, 13*(3), 411-435. doi: 10.1108/jrim-02-2018-0032
38. Rahi, S., Othman Mansour, M. M., Alharafsheh, M., & Alghizzawi, M. (2021). The post-adoption behavior of internet banking users through the eyes of self-determination theory and expectation confirmation model. *Journal of Enterprise Information Management, ahead-of-print*(ahead-of-print). doi: 10.1108/jeim-04-2020-0156
39. Rawung, F. H., Wuryaningrat, N. F., & Elvinita, L. E. (2015). The Influence Of Transformational And Transactional Leadership On Knowledge Sharing: An Empirical Study On Small And Medium Businesses In Indonesia. *Asian Academy of Management Journal, 20*(1).
40. Roldán, F., JL. (2012). & Sáánchez-Franco, MJ 2012. Variance-Based Structural Equation Modeling: Guidelines for Using Partial Least Squares in Information Systems Research. *Mora, M., Gelman, O., Steenkamp, A., &amp*, 193-221.
41. Samar, R., & Mazuri, A. G. (2019). Does gamified elements influence on user's intention to adopt internet banking with integration of UTAUT and general self-confidence? *International Journal of Business Excellence, 19*(3), 394-414.
42. Schermuly, C. C., Meyer, B., & Dämmer, L. (2013). Leader-member exchange and innovative behavior. *Journal of Personnel Psychology*.
43. Verona, G., Prandelli, E., & Sawhney, M. (2006). Innovation and virtual environments: Towards virtual knowledge brokers. *Organization studies, 27*(6), 765-788.

44. Wang, Z., Xu, S., Sun, Y., & Liu, Y. (2019). Transformational leadership and employee voice: An affective perspective. *Frontiers of Business Research in China*, *13*(1), 1-14.
45. Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of management journal*, *53*(1), 107-128.

DO CROATIAN INSTITUTIONS COMPETE IN THE IMPLEMENTATION OF ECONOMIC DIPLOMACY MODELS?

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ABSTRACT

Each country makes an endeavour to construct its own economic diplomacy model by which it will protect and ensure its economic growth and development as much as possible, thus positioning itself in the international environment. All the knowledge, experience and tradition which a country has gained during its international positioning can be condensed in its organisation model (method) of communication with other actors (subjects) on the international scene, while the set of all these activities is defined as the economic diplomacy model. The beginnings, condition and development of economic diplomacy in the Republic of Croatia has been quite neglected and not dealt with in literature, especially in relation to public diplomacy, while the theoretical and conceptual framework of understanding economic diplomacy, as well as clear determinants of the economic diplomacy model, have not been clearly set. The research subject is determined in consideration of the aforementioned problems: to do a research of and explain the currently implemented economic diplomacy model in Croatia. The basic hypothesis which will be tested in this research arises from the defined research subject: H1: The economic diplomacy model implemented by actors of economic diplomacy in Croatia is the model of competition. In the model of competition, the Ministry of Foreign Affairs and other ministries' tasks overlap without a clear-cut division of duties, not only those belonging to trade and foreign policy, but also those comprising the participation in international organisations' meetings. The aim of the research done in the institutional framework of economic diplomacy is to determine the current model of the Croatian economic diplomacy, try to prove the basic hypothesis of this paper and, depending on the research results, give recommendations for the improvement of the existing or the application of a completely new model of economic diplomacy in line with the growth and development of the Croatian economy.

Keywords: *the globalised market, economic diplomacy model, economic growth, economic development, Republic of Croatia*

1. INTRODUCTION

A consequence of the latest acceleration in the globalisation and liberalisation of trade is the intensified competition on both the domestic and foreign market. Therefore, those countries which have not built an economic diplomacy concept cannot have a proactive role in their relations to other countries, but become an object of other countries' economic diplomacies. The following classification of economic diplomacy models done by Rana (2005:5-6) can be found in literature:

a) Unified model – where the Ministry of Foreign Affairs completely manages and unifies issues linked to foreign affairs and foreign trade

b) Partially unified model – where the Ministry of Foreign Affairs and the Ministry of Economy jointly establish a special department dealing with trade and investments
c) Third agency model – the Ministry of Foreign Affairs does not deal with trade issues at all, whereas the independent bodies acting under the supervision of the Ministry of Foreign and European Affairs take over the affairs linked to trade
d) Model of competition – the tasks of the Ministry of Foreign Affairs, as well as other Ministries' affairs overlap, without a clear-cut work division, not only of those related to trade and foreign politics, but also of those related to the participation in international organisations meetings
e) Model of resignation – the Ministry of Foreign Affairs leaves the issues linked to trade and investments to other ministries.

When it comes to the notion of the economic diplomacy tradition in Croatia, it appeared late, not sooner than 2005, while in the institutional sense it occurred in 2011 with the then occurring economic diplomacy reform, i.e. the substitution of economic counsellors in Croatian diplomatic missions with trade attachés. However, in 2011 the parliamentary elections took place, and they led to a change in the Government and the structure of ministries, especially those of key importance for economic diplomacy: Ministry of Foreign Affairs and Ministry of Economy. The concept of economic diplomacy as designed by the former Government was abandoned, and the employment contracts were not prolonged for trade attachés. This indicates that the Croatian economic diplomacy system is politicised, and this is not a good way to "lure" high-quality employees. Another example of the politics' influence in Croatia and its classification into the model of competition is the confusing situation linked to the representation of the country in international organisations' meetings. An example is the 2015 elected president Kolinda Grabar Kitarović with whom Croatia entered the so-called cohabitation period when the Prime minister was Zoran Milanović and their point of view on foreign policy issues were, to put it mildly, opposite. This is the situation when the position of president of state is filled by a member of one, and the members of Government are representatives of another political option. If the system were not politicised, this would not be a problem, but in the Croatian model this is a serious problem for a good functioning of the system. For instance, after the Government made a proposal and the Prime Minister signed it, the president of state appointed ambassadors, but this immediately led to conflicts and a certain standstill in the appointment procedure. There are numerous more examples, such as the question of who is going to represent the country in EU or UN summits, since both the executive power led by the prime minister and the president of state think about themselves as those who should represent their state in international organisation meetings. The clearly defined objectives which want to be determined by this research are:

- The identification of the economic diplomacy model currently implemented in the Republic of Croatia (who are the activity bearers, who are the customers, what are the advantages or disadvantages)
- Possibilities and recommendations for the improvement of the existing model, or the determination of the need for the application of a completely new economic diplomacy model in the Republic of Croatia.

The research on the representatives of the institutional framework of the Croatian economic diplomacy is an important part of the research on the situation and the definition of needs and further guidelines for the advancement of economic diplomacy in the republic of Croatia.

2. LITERATURE OVERVIEW

Foreign authors' interest in economic diplomacy became prominent at the beginning of the 2000s when economic diplomacy appeared in research as an interdisciplinary field in the area of international economy, international political economy and international relations (Rana, 2000; Bayne and Woolcock, 2011, Okano – Heijmans, 2011). In the last fifteen years scientists have introduced the following concepts in their research and classification of economic diplomacy: economic diplomacy and commercial diplomacy (Saner and Yiu, 2003) which are under the responsibility of governmental actors followed by a whole line of "diplomatic" activities performed by the so called post-modern, non-governmental actors: corporative diplomacy, business diplomacy, national non-governmental organisations diplomacy, transnational non-governmental diplomacy, etc. In a book chapter by Bayne and Woolcock (2011) "Serving the Private Sector: India's experience in context," Rana (2011:95) differentiated economic diplomacy from commercial diplomacy, stating that commercial diplomacy had existed since the first trade exchange, whereas economic diplomacy appeared after World War II when governments started to pay greater attention to economic activities conducted with other countries. Bayne and Woolcock (2011:5) saw economic diplomacy as a country's activity in international economic relations. They put an emphasis on decision-making methods and processes employed by governmental bodies in their negotiations with other countries or international organisations when it came to their own country's economy. Lee (2004:51) defined economic diplomacy as "the joint process of the private and public sector which manages the commercial relations using diplomatic channels and processes." Narray (2008:2) had a similar definition stating that this was "an activity conducted by governmental actors with a diplomatic status directed toward the promotion of business between the homeland and the foreign country with the aim to support the development of the business sector through the promotion of business and its supporting activities." Former research in the area of economic diplomacy in Croatia (Sadžak, 2011; Plevnik, 2011) were based on a qualitative approach and a theoretical research concept, whereas the quantitative research aspect was neglected primarily due to a lack of data reachable by quantitative measurements in this area. In their economic diplomacy systems, governments try to harmonise three types of tensions so that their politics support each other, not collide. These tensions are: between the national and international economy and politics, between the international and domestic business actors, and between the Government and non-governmental organisations (Bayne et al. 2011). Bashkurti (2002) said that the establishment and application of a relevant model of economic diplomacy activity was important for the promotion of each country on the global market, strengthening of business cooperation, and cooperation with domestic institutions and organisations. In the research conducted by Okano-Haijmans (2011:19) about the milestone of international relations, the author reached the conclusion that the approach of a country to economic diplomacy was key to the development of international trade, attraction of investments and increase in export, but that those countries which increased and intensified their economic diplomacy activities, those which found new ways of conducting it, and those which identified and removed unnecessary and unsuccessful economic diplomacy activities, were more successful. Regarding the institutional infrastructure of economic diplomacy, Rana (2007:5) claimed that the reason why certain ministries which were bearers of a country's economic diplomacy were unsuccessful was the insufficiently developed institutional infrastructure of other institutions. Such an institutional environment was then not able to produce measures for successful economic diplomacy, and consequently to generate economic growth.

3. METHODOLOGY

The research of the institutional framework of the Croatian economic diplomacy included the Ministry of Foreign and European Affairs, Ministry of Economy, Croatian Chamber of

Economy, the Government of the Republic of Croatia, the Croatian parliament, the Croatian Employers' Association, the Croatian Managers' Association, the Association of Croatian Exporters, Croatian Tourist Board, Croatian Chamber of Trades and Crafts, Croatian Bank for Reconstruction and Development and Croatian Small Business, Innovations and Investments Agency. The sample included in the research was reached by personal evaluation and in line with the Ministry of Foreign and European Affairs presentation of the new system and model of economic diplomacy implementation. The research of the institutional framework of economic diplomacy was conducted in two parts. The first part of the research regarded the questionnaire which had to be filled out by the aforementioned institutions, while the second part included interviews with the persons in charge of these institutions. The first part of the research employed the structured interview method. It included four closed-ended questions, while the open-ended questions were not used in the questionnaire because detailed data were obtained via the institutional framework interview conducted in the second part of the research. The limitation of, i.e. objection to, the research is the sole process of qualitative analysis, or the conclusions of the research obtained by interviewing the persons who are institutional bearers of economic diplomacy. Namely, it is justified to question their possible bias, because as persons in charge, they represented "their" institutions and their personal status in them. Before the collection of data, the respondents were briefly informed about the purpose of the research.

4. DATA ANALYSIS AND INTERPRETATION OF RESULTS

All the economic diplomacy bearers included in the sample, i.e. 100% of them, responded to the survey. The research of the institutional framework of the Croatian economic diplomacy included the Ministry of Foreign and European Affairs, Ministry of Economy, Croatian Chamber of Economy, the Government of the Republic of Croatia, the Croatian parliament, the Croatian Employers' Association, the Croatian Managers' Association, the Association of Croatian Exporters, Croatian Tourist Board, Croatian Chamber of Trades and Crafts, Croatian Bank for Reconstruction and Development and Croatian Small Business, Innovations and Investments Agency. The sample included in the research was reached by personal evaluation and in line with the Ministry of Foreign and European Affairs presentation of the new system and model of economic diplomacy implementation[1]. The research of the institutional framework of economic diplomacy was conducted in two parts. The first part of the research regarded the questionnaire which had to be filled out by the aforementioned institutions, while the second part included interviews with the persons in charge of these institutions. The questionnaire consisted of four closed-ended questions, while the open-ended questions were not used in the questionnaire because detailed data were obtained via the institutional framework interview conducted in the second part of the research. The limitation of, i.e. objection to, the research is the sole process of qualitative analysis, or the conclusions of the research obtained by interviewing the persons who are institutional bearers of economic diplomacy. Namely, it is justified to question their possible bias, because as persons in charge, they represented "their" institutions and their personal status in them. Before the collection of data, the respondents were briefly informed about the purpose of the research.

Chart following on the next page

[1] http://gd.mvep.hr/files/file/gd/2019/Prezentacija.pdf

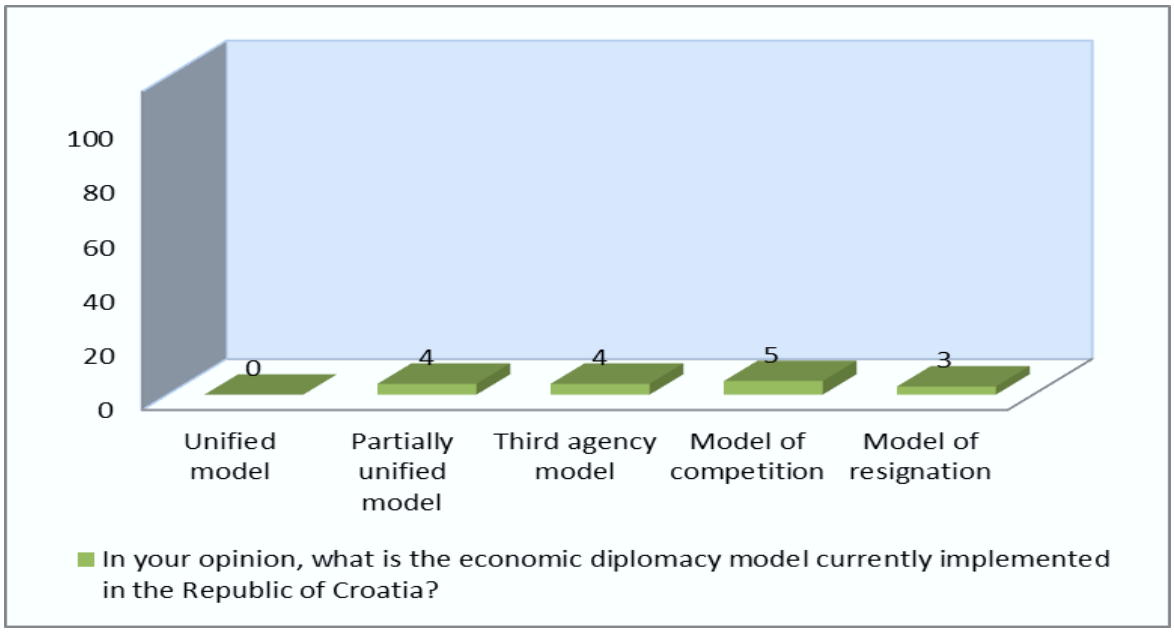

Chart 1: The implementation model of economic diplomacy in the Republic of Croatia according to the institutional framework opinion
(source: author's work)

The first question in the questionnaire related the institutional framework of the economic diplomacy model currently implemented in the Republic of Croatia. It can be seen that the opinions of the institutional framework about the current institutional model of economic diplomacy are divided, i.e. five institutions think it is the model of competition, four institutions consider it the partially unified model, while other four institutions think it is the third agency model, three are of the opinion that it is the model of resignation, but none considers it to be a unified model.

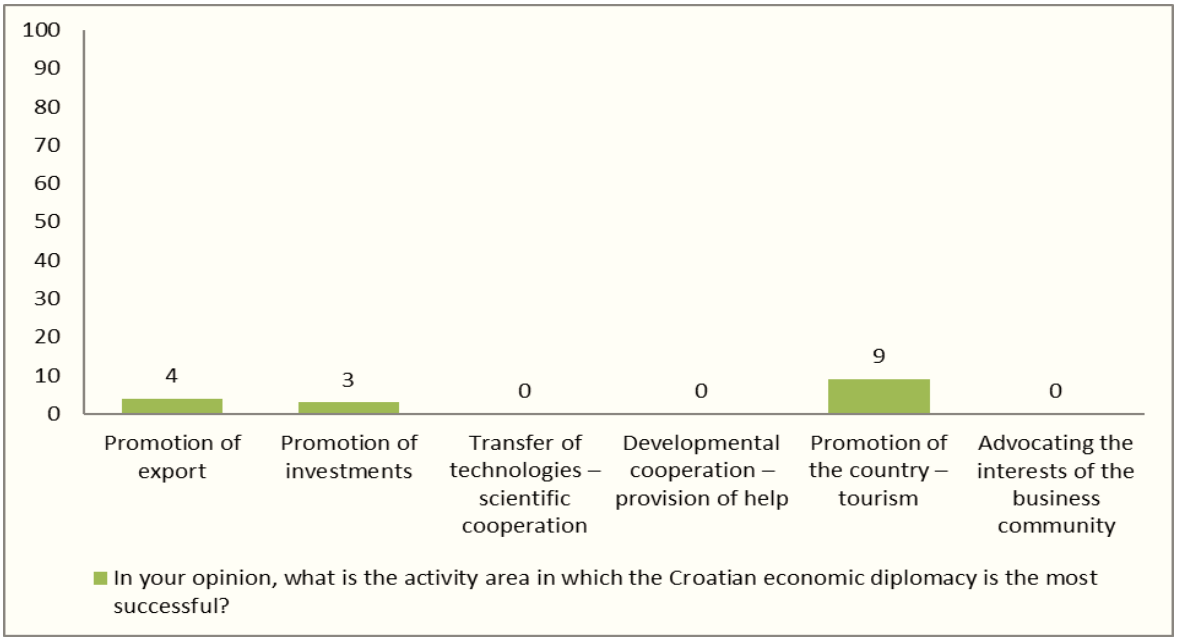

Chart 2: The success of economic diplomacy of the Republic of Croatia in activity areas according to the institutional framework opinion
(source: author's work)

The second question related the success of economic diplomacy in the Republic of Croatia according to activity areas. Most of the respondents in the institutional framework, namely nine of them, think that the promotion of the country – tourism is the most successful area of economic diplomacy activities in the Republic of Croatia, four institutions think it is the promotion of export, three think it is the promotion of investments, while none of the institutions thinks that the area of technology transfer – scientific cooperation, developmental cooperation – provision of help, or advocating the interests of the business community are areas of success for economic diplomacy.

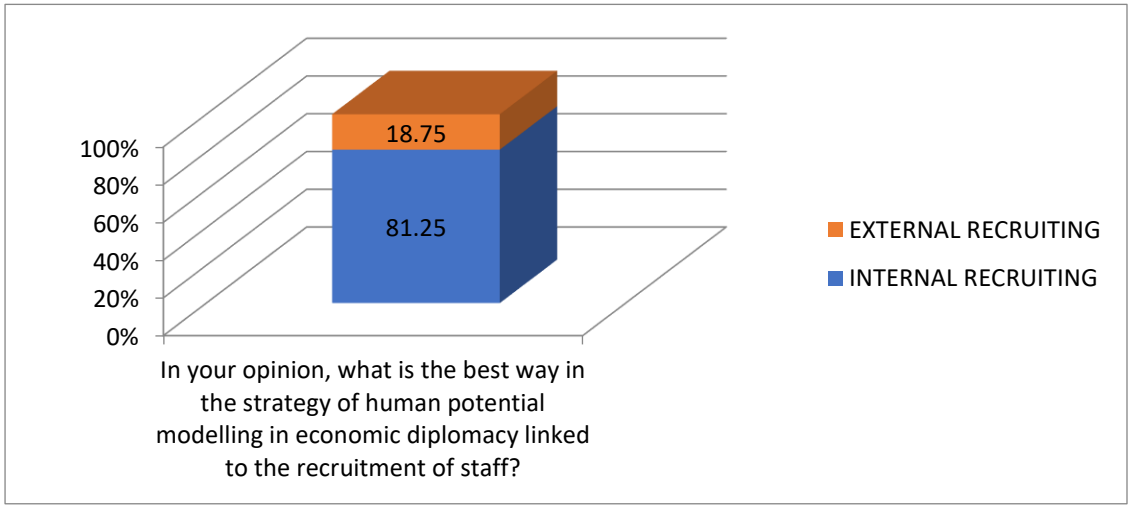

Chart 3: Recruitment of staff in the economic diplomacy of the Republic of Croatia (source: author's work)

The institutional framework's opinion about the strategy of human potential modelling in economic diplomacy, i.e. the recruitment of staff, is the research subject of the third question. As many as 13 institutions named external recruitment as the best way of choosing staff, whereas three of them think that the best way to choose employees is internal recruitment.

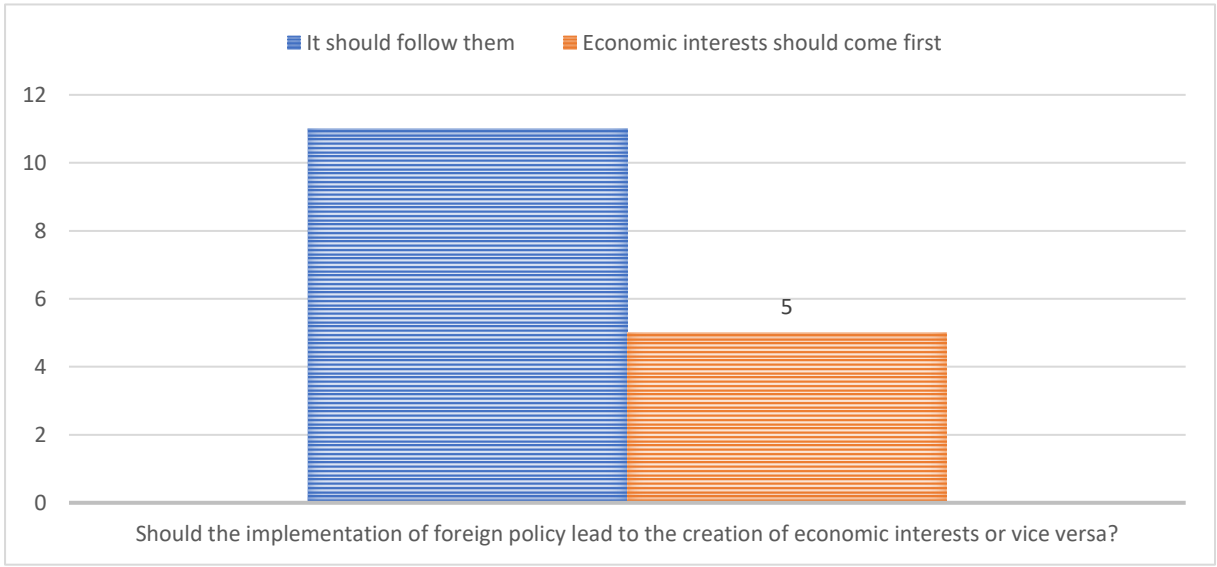

Chart 4: Implementation of foreign policy and economic interests according to the institutional framework (source: author's work)

Chart 4 presents the opinion of the institutional framework about the fact that the implementation of foreign policy should lead to the creation of economic interests. This was the fourth question in the survey. Eleven institutions think that economic interests should follow foreign policy, while five of them think that economic interests should have the primacy over the implementation of foreign policy. The second part of the research on the institutional framework of the Croatian economic diplomacy included the interview which was conducted with the representatives of the institutional framework in line with the formerly described methodological framework. The interview lasted for 20 minutes on average. The limitation of the research is, as formerly mentioned, the issue of the possible bias arising from it since the interviewed persons were those responsible for "their" institutions and their personal status in them. Respondents were asked four questions:

1) Which are the thematic areas of your institution inside the economic diplomacy of the Republic of Croatia?
2) What are the possibilities and recommendations for the improvement of the existing model of economic diplomacy implementation in the Republic of Croatia, and is there a need for the introduction of a completely new model of economic diplomacy in the Republic of Croatia?
3) How successful is the Croatian economic diplomacy compared to other countries' economic diplomacy, and which countries should be taken as exemplary?
4) By which services and activities do you help the business sector part of economic diplomacy activities, and consequently the Croatian economy, to be more competitive on the global market?

The answers given by economic diplomacy bearers lead to the conclusion that the Ministry of Foreign and European Affairs has only a declarative role as the institutional bearer of the Croatian economic diplomacy, because its role is visible only in one economic diplomacy area – the promotion of export, while in other areas of economic diplomacy such as the promotion of trade, attraction of foreign investment, branding of the country and developmental cooperation, the role of the Ministry of Foreign and European Affairs is not mentioned at all. More precisely, the Ministry of Foreign and European Affairs acts in the economic diplomacy primarily by providing services to Croatian exporters through its 74 diplomatic-consular missions abroad. The institutions engaged in economic diplomacy affairs, as stated by the Ministry of Foreign and European Affairs, are: Ministry of Foreign and European Affairs, Ministry of Economy and Sustainable Development, Government of the Republic of Croatia and Office of the President of state. The non-governmental institutions belonging to this category are: Croatian Chamber of Economy, Croatian Employers' Association, Croatian Exporters, Croatian Tourist Board and Croatian Bank for Reconstruction and Development. The Ministry of Foreign and European Affairs claims that the key role in the economic diplomacy implementation inside the Ministry of Foreign and European Affairs is played by the diplomatic-consular missions and the independent sector for trade policy and economic multilateral, as well as the independent sector for economic bilateral inside the Ministry of Foreign and European Affairs. Furthermore, in the Ministry of Economy there is the Administration for Competitiveness and Investments. Its task is to create an economic strategy, make sector analysis, prepare operative programmes, make proposals of legal acts, etc. However, there are administrations for international cooperation, investments and development in other Croatian ministries as well, and their job is practically the same as in the Ministry of Economy: preparation of analysis, proposals and monitoring of regulations, preparations of reports for EU institutions. Moreover, in the Ministry of Tourism the Administration for the Development and Competitiveness of Tourism serves as support to investors, i.e. it makes proposals about the advancement of incentive measures for the entrepreneurs' investment

activities. The Government claims that its role is to help the business sector through lobbying on the national level, especially in closing business deals and projects of strategic importance for the Republic of Croatia. On the other hand, the Ministry of Economy claims that its activities in the area of economic diplomacy is mostly oriented toward the attraction of investments so it has established the Sector for Investment Policy which proposes and follows regulations on investments, identify and propose regulations and assess their implementation, perform analytical-statistical affairs by collecting and exchanging economic data, and provide support to investors during the realisation of investment projects. The existing economic diplomacy model has both advantages and disadvantages. The advantage of the system introduced in 2013 is in its higher openness and approachability to entrepreneurs, but what has to be worked on is the compatibility of economic diplomacy activities and the real needs of the business sector. The Croatian Parliament does not have a thematic area about economic diplomacy, but members give active help in questions of trade contracts, the digital market, agriculture, energy industry and transport. They state the active participation of the state in co-financing the activities of Croatian operators in the European/global business networks, as well as the change/adoption of the legislative framework about the support in lobbying and implementation of an active economic diplomacy (for instance, a higher possibility for using the honorary consuls' influence or merging foreign aid with businessmen offers). The sector of international affairs inside the Croatian Chamber of Economy conducts bilateral and multilateral activities oriented toward the advancement of economic cooperation with foreign countries. Part of the Sector are the Department for the European Union and Department for the Attraction of Investments. They state that in the Croatian model of economic diplomacy all the actors implementing it should be better coordinated, because it is not rare that the responsibilities of the actors overlap. Furthermore, there is a need for better cooperation between diplomatic-consular missions of the Ministry of Foreign and European Affairs and the Croatian Chamber of Economy representatives. It would also be advisable to introduce the quantitative measurement of economic diplomacy results, and the best example to follow is Austria. The Croatian Employers' Association sees incompetent employees, insufficient means for the needs of economic diplomacy needs, which first needs to be identified in details, and slowness in meeting the needs and requests of the business sector as problems of the Croatian economic diplomacy model. The "apparatus" of the Croatian economic diplomacy needs to employ people with experience in the private sector, who will be paid according to their actual contribution, without the interference of politics in questions of employment. The existing economic diplomacy model needs to be revised, not only agreeing with the public sector, but with the business one as well, because they are the ones for which economic diplomacy activities should be conducted in the first place. Scandinavian countries are a good example of the solution to the problem of economic diplomacy model implementation. Entrepreneurs play a central role there, and everything else is subordinate to them. Representatives of the Croatian Association of Exporters emphasize that they are a non-profit, non-partisan and non-governmental association which acts independently and cannot be subordinate to any external authority so they think that they can objectively evaluate the functioning model of the Croatian economic diplomacy. They object the slowness of the legislative authorities, i.e. the legislative framework does not react sufficiently fast, and it does not adapt to the needs of the market and the business sector, as was the case when Croatia became a member of the EU and their members/exporters faced numerous obstacles of an administrative and technical nature which did not enable the placement of their products and services on the foreign market. Here, they say, the true picture of how the Croatian economic diplomacy model does not function emerged since the Croatian institutional framework led by the Ministry of Foreign and European Affairs did not know how to answer the inquiries which exporters, through it, sent to competent institutions part of the economic diplomacy, the reactions to the inquiries were slow and

resulted only in general information on trade barriers and agreements instead of detailed information demanded by exporters. It is also common that institutions, when sending the exporters inquiries, show a high level of lack of coordination since, for instance, the Ministry of Foreign and European Affairs indicates the Ministry of Economy as competent for a certain problem area, while the Ministry of Economy sends them to the Ministry of Foreign and European Affairs. The Croatian Chamber of Economy thinks that Croatia is somewhat behind with the economic diplomacy system, and that it should take as an example the Austrian economic diplomacy model where the private sector is the one on top of the hierarchical scale, and the system is formed in line with their needs and priorities. It emphasizes that the economic diplomacy main tasks should be the promotion of the Croatian economy abroad, the introduction of the Croatian situation to foreign investors, and the creation of new business contacts. Regarding the Croatian economic diplomacy model, the Croatian Tourist Board states that in their part of economic diplomacy they made huge steps forward in the improvement and higher efficacy of the Croatian model functioning. This primarily relates to the shutdown of representations and branches abroad which did not have positive results while being a significant financial expenditure. The "thematic" area of economic diplomacy dealt with by the Croatian Tourist Board is the promotion of the country in the sense of tourist branding, while the tourist branding activities are, except at fairs and tourist manifestations, conducted through the Croatian Tourist Board representations and branches abroad and through Tourist Board offices in Croatia. According to the interview answers obtained by representatives of the Association of Croatian Managers and Entrepreneurs, they do not deal with economic diplomacy at all, but they agreed to be interviewed primarily to express their opinion about the functioning of the Croatian economic diplomacy. As the members of the association are chief managers, presidents and member of company boards, managers of certain business functions, industry managers belonging to the chamber system and other economic associations and institutions, as well as company CEOs/owners, the Association of Croatian Managers and Entrepreneurs has in the last 25 years widened their activities and achieved cooperation with international associations and organisations. When it comes to the Croatian economic diplomacy model, they conclude that it is not possible to classify the Croatian model since there is no consistent decision-making policy about the economic diplomacy activities which need to be intensified, nor is it clear who is the bearer of certain activities in the Croatian economic diplomacy inside the institutional framework. Moreover, the economic diplomacy activities are not congruent to the economic situation and business sector needs, while the public diplomacy, or politics, influence on the economic diplomacy is still superior instead of the opposite such as in, for instance, France or Scandinavian countries. The Croatian Bank for Reconstruction and Development mentions the cooperation with the Croatian Chamber of Economy and ministries responsible for the bilateral and multilateral economic cooperation of the Republic of Croatia, and which, in this sense, tackle economic diplomacy. They emphasize that they support, i.e. grant credits to projects from all spheres which are related to economic diplomacy such as technology transfer or tourist projects. However, they are mainly focused, in line with their clients' requests, to the increase of export. They point out that the game on the international market is very demanding, while the export projects bring along risks which are not always evident, but can be diminished by appropriate insurance instruments. In the name and on behalf of the Republic of Croatia, the Croatian Bank for Reconstruction and Development performs the insurance of claims occurring during the export of goods and services from non-marketable commercial and political risks. Regarding the success of the Croatian economic diplomacy model, they think they cannot objectively evaluate the functioning of the Croatian economic diplomacy model because their business is only "caressed" by a part of this model, mostly in the area of export promotion.

Their cooperation with the Croatian Chamber of Economy and competent ministries is good, while they do not have business contacts with the Ministry of Foreign and European Affairs. The Croatian Small Business, Innovations and Investments Agency representatives claim that economic diplomacy is a wide concept, and in their opinion, every economic activity is involved in the area of economic diplomacy activity. They characterise the area of technology transfer – scientific cooperation as the primary focus of the Croatian Small Business, Innovations and Investments Agency inside the economic diplomacy. They emphasize that the main stream of their activities is to ensure support for research, development and innovations, in order to start up the Croatian economic growth by supporting technological innovations in economy and scientific institutions, all through the technological development which would strengthen the Croatian global competitiveness and social values. They also emphasize that they help small economic operators which make an endeavour to penetrate foreign markets through the European Entrepreneurship Network and its Croatian consortium. They point out that the European Entrepreneurship Network is made by chambers of economy, technological centres, universities, research institutes and developmental agencies joined together by powerful databases thanks to which they share their knowledge and information on technologies and business partners with other members of the network. The European Entrepreneurship Network is closely connected to the European Commission which enables a constant compliance to the development of EU policies and the transfer of small businesses' attitudes back to Brussels which is more than necessary to small businesses. Speaking about the model of the Croatian economic diplomacy, they conclude that they can express their experiences and conclusions about the institutional actors in the economic diplomacy only for the Croatian Chamber of Economy with which they are part of the Croatian consortium of the European Entrepreneurship Network, as well as about the Ministry of Economy whose part they, in fact, are. They did not have the opportunity to cooperate with the Ministry of Foreign and European Affairs and other institutional actors and therefore they do not want to express opinions about the institutional framework and model of the Croatian economic diplomacy. Following the conducted research on the economic diplomacy institutional framework, the country study on the Croatian economy, and the critical analysis of recent domestic and foreign scientific and professional literature about the research subject, the set hypothesis (H1) has been proved: The economic diplomacy model implemented by actors of economic diplomacy in Croatia is the model of competition. The proved confirms what has been defined in advance based on the current model of Croatian economic diplomacy implementation, and that is the fact that the Ministry of Foreign and European Affairs and other ministries' tasks overlap, without a clear division of duties, not only those related to foreign trade and investments, but of those which are linked to the participation in international organisation meetings as well. It remains unclear whether the economic diplomacy is implemented only by governmental or regional and local institutions and the non-governmental sector, and whether economic diplomacy includes only bilateral or multilateral activities as well.

5. CONCLUSION

According to the processed data it can be concluded that Rana's classification (Ibidem) categorises the Croatian economic diplomacy model as the model of competition. In this model the Ministry of Foreign and European Affairs and other ministries' tasks overlap, without a clear division of duties, not only those related to foreign trade and investments, but of those which are linked to the participation in international organisation meetings as well. The data in favour of the classification of the Croatian economic diplomacy model as a model of competition, which is also the basic hypothesis of this paper, is the fact that in Croatia there are more than 30 governmental and public offices, agencies, commissions, companies and working teams for the attraction of investments with more than 350 employees only for one area of

economic diplomacy activity – the attraction of investments. This is the highest number of institutions which give incentives to investments in the entire European Union. Such a situation can be quite confusing, especially due to the unclearly defined duties linked to the field of action and overlapping, as well as "competitiveness" of certain institutions' representatives linked to the responsibility of attracting foreign investments. Thus, parallel to the Agency for Investments and Competitiveness (AIC), there is the Centre for the Assessment of the Energy Sector and Investments whose list of tasks is similar to that of AIC, and there is also the Croatian Small Business, Innovations and Investments Agency with the same task – attraction of investments. There is also the question of efficacy reached by these institutions in the same field of action, but this exceeds the limits of this research and is therefore recommended for further research in the sense of a quantitative measurement of the efficacy of institutions belonging to economic diplomacy.

LITERATURE:

1. Baldwin, J.R. (1995), The Dynamics of Industrial Competition: A North American Perspective, Cambridge University Press, Cambridge
2. Bashkurti, L. (2003), „Diplomacy and the business community". Diplomatic Academy year book. – 5, (1) str. 61-66
3. Bayne, N, (2011), The Diplomacy of the Financial Crisis in Context. The Hague Journal of Diplomacy, 6(1–2), pp 187–201.
4. Bayne, N. , Woolcock, S. et al. (2011), The new economic diplomacy : decision making and negotiation in international economic relations. 3rd ed., revised and updated. Farnham; Burlington : Ashgate, cop.
5. Bazdan, Z. (2011), Croatian economic diplomacy should be managed by the president of the Republic of Croatia : case study: We and global intelligence revolution. Ekonomija. 17, (2), str. 327-355
6. Bazdan, Z. (2011), Gospodarska diplomacija i patološki trendovi globalne ekonomije. Case study: Republika Hrvatska, Poslovna izvrsnost. 5, 1; str. 103-124 URL: hrcak.srce.hr/file/112071
7. Beck, T. and Laeven, L. (2005), "Institution Building and Growth in Transition Economies". World Bank, Policy Research Working Paper, No. 3657.
8. Lee, D. (2004), 'The growing influence of business in U.K. diplomacy', International Studies Perspective, Vol. 5, No 1
9. Lee, D., and Hudson, L. (2004), "The old and the new significance of political economy in diplomacy", Review of International Studies, 30, 343-360
10. Naray, O. (2008), "Commercial Diplomacy: A Conceptual Overview." Conference paper for the 7th World Conference of TPOs – The Hague, The Netherlands.
11. Naray, O. (2010), "Commercial Diplomats in the Context of International Business", The Hague Journal of Diplomacy, 6, 121-148.
12. Naray, O. (2010), "What a good commercial diplomat has to know and be capable of", Exchange: The Magazine for International Business and Diplomacy, 2 (December 2010)
13. Okano-Heijmans, M. (2011), „Changes in Consular Assistance and the Emergence of Consular Diplomacy", in Jan Melissen and Ana Mar Fernandez (eds), Consular Affairs and Diplomacy, Leiden and Boston: Martinus Nijhoff Publishers, str. 21-41
14. Plevnik, J. (2001), „Značenje geopolitike i geoekonomije u suvremenim međunarodnim odnosima" Međunarodne studije - časopis za međunarodne odnose, vanjsku politiku i diplomaciju, 1, 2/3, str. 21-42

15. Potter, E. H. (2004), "Branding Canada: The Renaissance of Canada's Commercial Diplomacy", International Studies Perspectives, 5, 55-60Putnam, R. D. (1993), Making Democracy Work: Civic Traditions in Modern Italy. Princeton, NJ: Princeton University Press.
16. Rana, K. S. (2002), "Bilateral Diplomacy", DiploProjects, Mediterranean Academy of Diplomatic Studies, Malta
17. Rana, K. S. (2000), Inside Diplomacy, Chapter 4, Manas, New Delhi
18. Rose, A.K. (2007), „The foreign service and foreign trade:embassies as export promotion“, World Economy 30, str. 22-38,
19. Ruel, H. J. M. and Visser, R. (2012), "Commercial diplomats as corporate entrepreneurs: explaining role behavior from an institutional perspective", International Journal of Diplomacy and Economy.
20. Ruëll, H. and Zuidema, L. (2012), The Effectiveness of Commercial Diplomacy. A Survey Among Dutch Embassies and Consulates. Discussion Paper in Diplomacy. Netherlands Institute for International Relations Clingendael.
21. Sadžak, M. (2011), Ekonomska diplomacija : kroskulturalni pristup. Zagreb, Sarajevo : Synopsis
22. Saner, R. and Yiu, L. (2003), International Economic Diplomacy: Mutationin Post-modern Times. Discussion Paper in Diplomacy. Netherlands Institute for International Relations Clingandael.
23. Yakop, M. and Bergeijk, P. (2009), 'The weight of economic and commercial diplomacy', Working Paper International Institute of Social Studies, No. 478, The Hague: International Institute of Social Studies
24. Žirovčić, D. (2012), Pokušaj određenja gospodarske diplomacije. Međunarodne studije. 12, 2, str. 90-105 URL:http://diplomacija.hr/medjunarodne_studije/medunarodne_studije_12-2-2012.pdf#page=91
25. Hrvatska gospodarska diplomacija, n. d. URL:http://hgd.mvpei.hr/
26. Hrvatski Sabor, 2011, Osnovni tekst iz NN 125/11 od 07.11.2011, dostupno na linku http://www.zakon.hr/cms.htm?id=269,
27. Hrvatski Sabor, 2012, Izmjene iz NN 144/12 od 21.12.2012, dostupno na linku http://www.zakon.hr/cms.htm?id=270,
28. http://business.croatia.hr/hr-HR/Hrvatska-turisticka-zajednica
29. http://da.mvep.hr/hr/o-nama/diplomatska-akademija/
30. http://gd.mvep.hr/hr/trgovinska-politika-europske-unije/trgovinski-odnosi-s-drzavama-regije/
31. http://gd.mvep.hr/hr/trgovinska-politika-europske-unije/trgovinski-zastitni-mehanizmi

A NEW MILLENNIUM OF CRISES AND PUBLIC DEBT FOR THE EUROPEAN UNION COUNTRIES

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ABSTRACT

The new millennium brought promises of a fresh dawn of stability and enduring economic growth for Europe. The European Union (EU) member states gathered efforts and managed to successfully generate a new, not only regional, but global currency as well: the Euro. Together with the new currency, a pack of controlling institutions and instruments for price stability, public budget and public debt was implemented and the future seemed to be the most auspicious possible for the European people. Nevertheless, not even in someone's darkest dreams could be possible to imagine that, soon after the Eurozone creation, the Euro was at risk of collapsing, following a severe global financial and economic crisis, labelled as the Great Recession. Furthermore, no one could ever imagine that a few more years later a major global public health crisis would follow, tearing apart the feeble recovering efforts from the precedent financial crisis. Not to mention the turmoil resulting from the so-called Brexit process, which led to the astonishing exit of the United Kingdom from the EU. Consequently, twisted monetary policies were implemented, which included very aggressive quantitative easing programs and negative interest rates, turning the not-so-old and very rigid Maastricht criteria in a kind of fairy-tale. Indeed, it took only two decades on the new millennium for the European Union to somewhat disregard the sixty percent public debt-to-GDP (Gross Domestic Product) criteria, as nowadays the average ratio for the Eurozone bloc is a staggering figure of around one-hundred per cent. The 2008's debt crisis, consequence of over-leveraging, was eased by the means of issuing even more debt, but at very cheap prices. Finally, when the conditions to start reducing significantly the extremely high levels of debt seemed to be met, the pandemic came and the same recipe was employed once again: even more debt issuance and more twisted monetary policies to ensure a long period of very cheap money and enduring humongous stocks of debt. This paper addresses the issue of the public debt in the European Union and the consequences for the economic growth, by examining two decades of data of the Member States, both from the Eurozone and Non-Eurozone areas.

Keywords: *Economic and Financial Crisis, European Union, Eurozone, GDP (Gross Domestic Product), Monetary Policy, Public Debt*

1. INTRODUCTION

The discussions on whether the public debt can effectively contribute to a sustainable economic growth are everlasting. Such difficulty is amplified as many have opposite views on the government's role on economic affairs. Different views lead to diverse arguments about how economic policies should be orientated while pursuing the goal of increasing wealth and economic growth. In this paper, such examination is made within the framework of the European Union (EU) in recent times, from the time of the inception of the recent monetary union. The new millennium brought promises of a fresh dawn of stability and enduring economic growth for Europe. The European Union member states gathered efforts and managed to successfully generate a new, not only regional, but global currency as well: the Euro.

Together with the new currency, a pack of controlling instruments for price stability, public budget and public debt was implemented and the future seemed to be the most auspicious possible for the European people. Nevertheless, not even in someone darkest dreams could be possible to imagine that, soon after the Eurozone creation, the Euro was at risk of collapsing, following a severe global financial and economic crisis, labelled as the Great Recession. Furthermore, no one could ever imagine that a few more years later a major global public health crisis would follow, tearing apart the feeble recovering efforts from the precedent financial crisis. Not to mention the turmoil resulting from the so-called Brexit process, which led to the astonishing exit of the United Kingdom from the EU. Consequently, twisted monetary policies were implemented, which included very aggressive quantitative easing programs and negative interest rates, turning the not-so-old and very rigid Maastricht criteria in a kind of fairy-tale. Indeed, it took only two decades on the new millennium for the European Union to forget the 60% public debt-to-GDP (Gross Domestic Product) criteria, as nowadays the average ratio for the Eurozone bloc is a staggering figure of around 100%. The 2008's debt crisis, consequence of over-leveraging, was eased by the means of issuing even more debt (!), but at very cheap prices. Finally, when the conditions to start reducing significantly the extremely high levels of debt seemed to be met, the pandemic came and the same recipe was employed once again: even more debt issuance and more twisted monetary policies to ensure a long period of very cheap money and enduring humongous stocks of debt. In this paper is addressed the issue of the public debt in the European Union and the consequences for the economic growth, by examining two decades of data of the Member States, both from the Eurozone and Non-Eurozone areas.

2. PUBLIC DEBT AND ECONOMIC GROWTH

While seeming obvious that the public debt is likely and should generate economic growth, the reality is that such link may not exist. At worst it may even be a negative relationship. Therefore, literature is all but consistent, as the spectrum of findings is quite high: from a positive relationship between public debt and economic growth, to a negative one, while some authors could not find any significant link (vid. e.g. Pegkas et al., 2020; Reinhart and Rogoff, 2010; Ribeiro et al., 2012; Mhlab and Phiri, 2019; Snieska and Burksaitiene, 2018; Burhanudin et al., 2017; De Vita et al., 2018; Liagat, 2019; Esteve and Tamarit, 2018, Amann and Middledtich, 2017; Intartaglia et al., 2018; Chiu and Lee, 2017, Brida et al., 2017). Overall, while trying to resume the inconsistent findings from this strand of literature, one can argue that the relationship between GDP and public debt is more likely to be positive in the short term, but more possibly negative in the long run. Several factors contribute to such diversity of outcomes, as is the case of the level of public debt-to-GDP for a given country: the higher it is, less likely is supposed to have public debt contributing positively for the economic growth. This is one of the reasons why the Maastricht criteria of the 60% public debt-to-GDP ratio was set. Such broad suggestions for public debt may be regarded as well for the debt phenomenon in general. In fact, one can similarly make such assumptions for the private debt, as broadly discussed in the literature (vid. e.g. Cafiso, 2019; Levine, 2005; Bernanke and Gertler, 1995; Ribeiro et al., 2012). Some other factors may also interfere in the strength of the relationship between public debt and GDP growth. For example, in the European Union is common practice for Member States to use the public debt as tool to attract foreign investment. Furthermore, it is also very common for Member States to be forced to issue public debt in order to finance and to have access to European funds. Unsurprisingly, there are many authors researching about the link between public debt and economic growth. As in the cases presented previously, the relationship between these two factors is not always found to be significant (vid. e.g. Pegkas et al., 2020; Srinivasan et al., 2011; Srinivasan and Ibrahim, 2010; Azam et al., 2013; Azam et al., 2014; Azam and Ibrahim, 2014; Muhammad and Gavrila, 2015; Azam and Ather, 2015; Ribeiro et al., 2012).

3. CRISES AND DEBT: EVIDENCE OF TWO DECADES OF INCREASING PUBLIC DEBT

As referred earlier, to be able to join the Eurozone, a country must meet first the Maastricht criteria. In this paper, the 60% limit of Public Debt as a percentage of GDP is particularly relevant. From Figure 1, shown below, one we can outline several conclusions inherent to the data presented graphically.

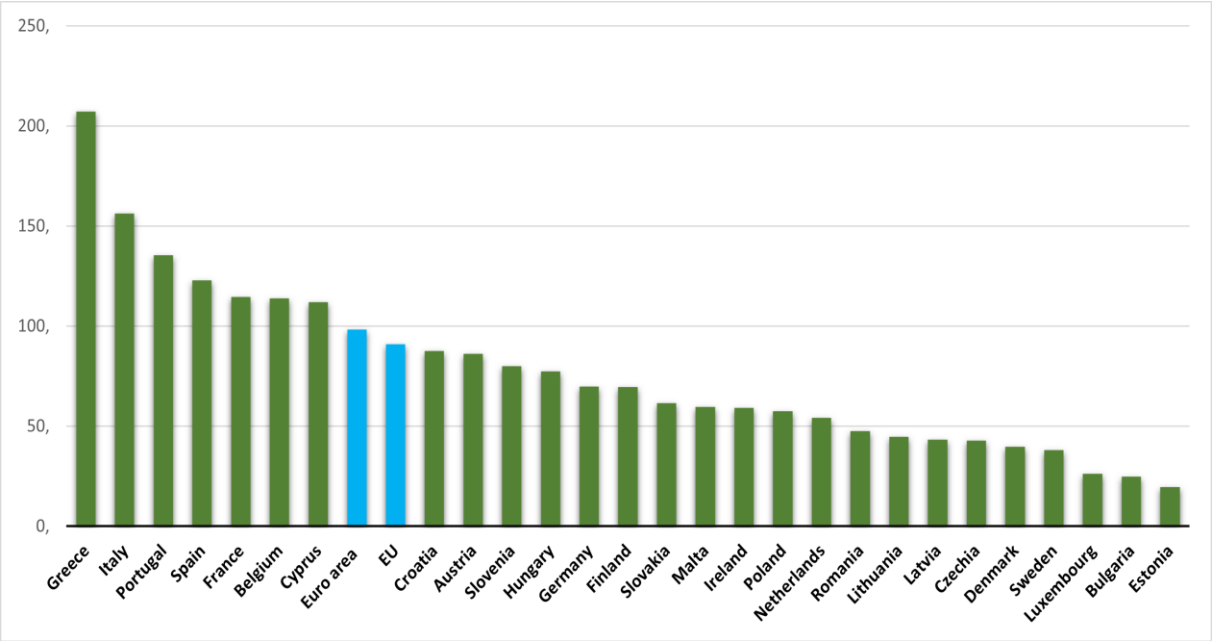

Figure 1: Government Debt to GDP Ratio, 2021 Q2, in Percentage (Source: Eurostat, 2021)

As mentioned in the introduction, many countries which were still recovering from the 2008 financial crisis aftermath, were more recently confronted again with another major challenge to their economies: the covid-19 global pandemic. The graph in Figure 1 reflects the global cumulative picture of such effects, as the succession of crisis resulted on the countries' public debt figures as a percentage of GDP to soar again, to even more extreme values. Indeed, the countries with the highest values are those that in 2008 also suffered severe problems in their economies, which shows the vulnerability of their economies, even after a decade in which many of them managed to recover slowly. Interestingly, and unsurprisingly, the Eurozone average ratio is relatively close to 100%, indicating that all the wealth produced in the Eurozone during one year would have to be used in order to cover entirely the public debt of the Eurozone group of countries. Nevertheless, it is worthwhile to mention that most of the countries managed to keep their debt levels at or close to the Eurozone and European Union average, almost 100% for the first and a little bit lower for the later, although the figures for many of these countries are on excess of the 60% threshold. In fact, only around half of the European Union's member states are complying the 60% public debt limit, although some of such do not belong to the Eurozone bloc, as is the case of Denmark and Sweden, countries with some of the lowest relative values of public debt. On the flip side of the coin, Greece, Italy, Portugal and Spain, countries that suffered previously very much with the severe crisis of 2008, are in even worst financial condition now, as a result of the current pandemic economic limitations, further aggravating their situations and putting some of the previous recovery in question. These four countries continue to present public debt-to-GDP ratios well above 100%, with a particular negative note for Greece, with a value above 200%, while, conversely, Estonia, being the country with the lowest percentage, has only a public debt level of 20%.

It should also be highlighted that, while the average of the Eurozone, as well as the European Union, is well above 60% of the Maastricht criteria, the following countries: Malta, Ireland, Poland, Netherlands, Romania, Lithuania, Latvia, Czechia, Denmark, Sweden, Luxembourg, Bulgaria and Estonia do comply with the criteria even with the public debt criteria, even with the pandemic crisis at a critical stage.

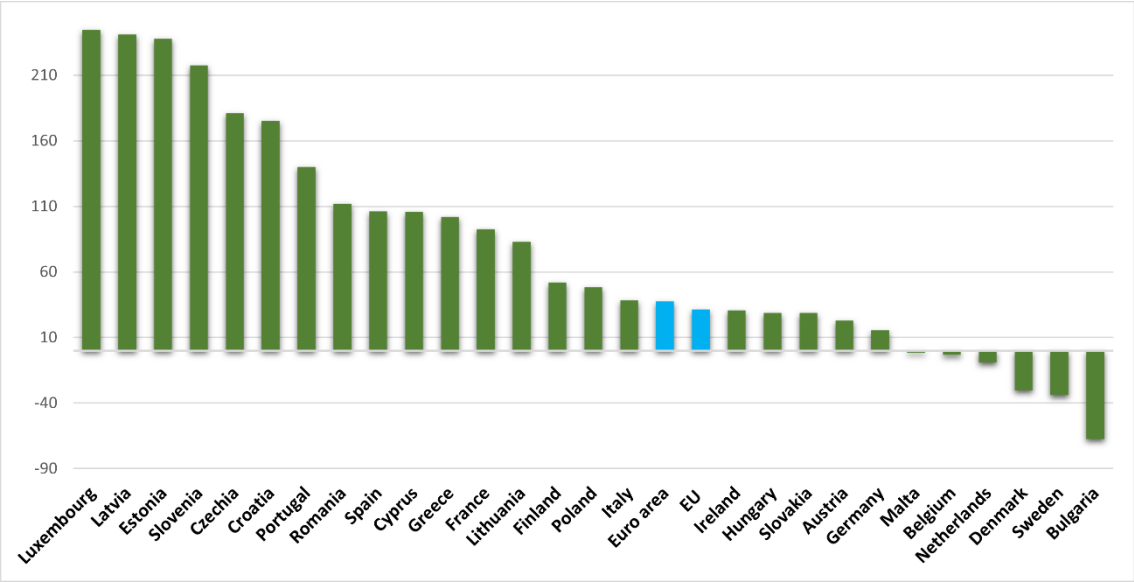

Figure 2: Changes in Public Debt to GDP Ratio, 2021Q2 compared to 2000Q1, in percentage
(Source: Eurostat, 2021)

In figure 2, shown above, one can compare the values of the Public Debt as a percentage of GDP in the second quarter of 2021 versus the ratio of the first quarter of 2000, and, therefore, understand the evolution on the EU countries across the two first decades of the new millennium. Through their policies, some European countries managed, in some cases, to reverse the direction of their public debt values as a percentage of GDP. The overall evolution for the Eurozone area was an average increase of around 40% from 2000 to 2021. However, there are many countries which present figures well above the average, mostly small-medium economies, such as Luxembourg, Latvia, Estonia, or Slovenia. These four countries display increases on the Public Debt-to-GDP ratio of above 200%, being followed by Czechia and Croatia, with increases of 150%, and Portugal, a little under 150%. Being more accurate, the three countries with top increases on the public debt ratio are close to 250%, which could be otherwise considered as absurd values. Nevertheless, the starting points of these countries are extremely low, with single digit, or close, Public Debt-to-GDP ratios, as can be observed below, in Table 1. On the other hand, it is worth highlighting the public debt ratio decreases of Bulgaria and Sweden, as well as those of Denmark, the Netherlands, Belgium and Malta, although the latter display figures closer to positive.

Table following on the next page

	% Public Debt-to-GDP				*Difference in PP of GDP, 2021Q2 compared with:*		
	2000Q1	**2008Q2**	**2019Q4**	**2021Q2**	***2000Q1***	***2008Q2***	***2019Q4***
Austria	70,2	66,6	70,6	86,2	*16*	*19,6*	*15,6*
Belgium	117,4	90,7	97,7	113,7	*-3,7*	*23,0*	*16,0*
Bulgaria	76,2	14,6	20,0	24,7	*-51,5*	*10,1*	*4,7*
Croatia	31,8	37,1	72,9	87,5	*55,7*	*50,4*	*14,6*
Cyprus	54,4	49,0	91,1	112,0	*57,6*	*63,0*	*20,9*
Czechia	15,2	26,0	30,6	42,7	*27,5*	*16,7*	*12,1*
Denmark	57,1	27,7	33,6	39,7	*-17,4*	*12,0*	*6,1*
Estonia	5,8	4,3	8,6	19,6	*13,8*	*15,3*	*11,0*
EU	69,2	62,8	77,2	90,9	*21,7*	*28,1*	*13,7*
Euro area	71,5	66,9	83,6	98,3	*26,8*	*31,4*	*14,7*
Finland	45,7	32,2	59,5	69,4	*23,7*	*37,2*	*9,9*
France	59,5	66,0	97,5	114,6	*55,1*	*48,6*	*17,1*
Germany	60,4	64,4	58,9	69,7	*9,3*	*5,3*	*10,8*
Greece	102,6	103,7	180,5	207,2	*104,6*	*103,5*	*26,7*
Hungary	60,7	66,5	65,5	77,4	*16,7*	*10,9*	*11,9*
Ireland	45,2	26,4	57,2	59,1	*13,9*	*32,7*	*1,9*
Italy	112,9	106,1	134,3	156,3	*43,4*	*50,2*	*22,0*
Latvia	12,7	9,8	36,7	43,3	*30,6*	*33,5*	*6,6*
Lithuania	24,4	13,9	35,9	44,6	*20,2*	*30,7*	*8,7*
Luxembourg	7,6	8,5	22,3	26,2	*18,6*	*17,7*	*3,9*
Malta	61	59,7	40,7	59,5	*-1,5*	*-0,2*	*18,8*
Netherlands	59,5	43,9	48,5	54,2	*-5,3*	*10,3*	*5,7*
Poland	38,7	42,9	45,6	57,4	*18,7*	*14,5*	*11,8*
Portugal	56,4	71,6	116,6	135,4	*79*	*63,8*	*18,8*
Romania	22,4	11,3	35,3	47,5	*25,1*	*36,2*	*12,2*
Slovakia	47,7	27,3	48,2	61,4	*13,7*	*34,1*	*13,2*
Slovenia	25,2	24,3	65,6	80,0	*54,8*	*55,7*	*14,4*
Spain	59,6	35,0	95,5	122,8	*63,2*	*87,8*	*27,3*
Sweden	57,2	36,5	34,9	37,9	*-19,3*	*1,4*	*3,0*

Table 1: General government gross debt by Member State, Maastricht criteria (Source: Eurostat, 2021)

Table 1 shows the public debt figures as a percentage of GDP, as well as a comparison in percentage points of the recent period of the 2nd quarter of 2021 versus certain key comparing periods, namely the 1st quarter of 2000 and the crises periods: the 2nd quarter of 2008 and the 4th quarter of 2019, representing therefore the first full set of data available for the set of EU countries; the beginning of the financial crisis; and the beginning of the pandemic crisis, respectively. It is important to note that the variations on Table 1 are on Percentage Points (PP) of public debt on GDP, while on previous Figure 2, the variations were calculated using simple percentages figures. In relation to the values obtained in the first section of the table, referring to the percentages of public debt GDP, one can draw a few interesting conclusions. In 2000Q1 it can be concluded that there was a serious effort of a large number of countries to have public debt values below the 60% of Maastricht criteria. This effort is evident as many countries display values under or close to 60%, such as Portugal, France, Cyprus, Sweden, Spain and the Netherlands. Nevertheless, there are countries which did not manage to comply with this criterion, namely Belgium, Greece and Italy, standing out with values above 100%.

Conversely, it is possible to observe some cases of positive exception, as having very low debt values in the beginning of the period of analysis, such as Luxembourg, Latvia and Estonia, the latter being the one with the lowest value (5.8%). As of deep impact, was the period beginning on 2008Q2, when the effects of the financial crisis began to have clear and devastating effects on the economies of the EU countries. Portugal, with 71.6%; Italy, with 106.1%; and Greece, with 103.7%, were some of the countries in worst condition, and therefore less prepared for the negative impacts coming from the financial crisis. With this regard, the cases of Italy and Greece were of particular seriousness, as they would require over one year of full GDP to cover their very much excessive amounts of public debts, i.e. well in excess of 100% of the GDP. A decade later, debt values have, curiously, risen in general, a phenomenon that could be perceived as somewhat puzzling, since the debt crisis was initially tackled with austerity measures. Nevertheless, such measures, intended to reduce the very high leverage levels, led to a severe economic downturn, resulting in a ten-year period of anaemic economic growth, with very slow recoveries for the most affected countries. Consequently, and as a result of improved financial and economic conditions, such austerity measures were gradually lifted, being replaced by more expansionary economic and monetary policies. In the most recent period of 2021Q2, we can perceive the most serious effects of the Covid-19 crisis, from which inevitably the countries suffered severe consequences and, therefore, returned to more expansionary monetary and financial policies, meaning another stage of debt increase, mostly of public nature. It is clear that some of the countries most affected by outbreaks of the virus were those that observed their public debt values rising higher, with several hotspots as Cyprus (112%), France (114.6%), Spain (122.8%), Portugal (135.4%), Italy (156.3%), and the usual laggard, Greece, which returned to extremely high levels of public debt: 207.2% of GDP. On the second section of the Table 1, one can examine the variation of the public debt in percentage points, providing some useful evidence about the effects that have already been mentioned in the analysis made in terms of percentual variation of public debt on GDP. During the period of analysis of 2000Q1, comparing with 2021Q2, we can find some curious aspects: Bulgaria managed to decrease its debt by -51.5 percentage points in two decades, as well as Denmark, -17.4, and Sweden: -19.3. Some other countries experienced a reduction of public debt levels, but single-digit variations only. Most countries increased their public debt levels over the last two decades. Most noteworthy, Greece was the only country that in this period observed a three-digit variation, with a variation 104.6 pp, which is clearly an exaggerated figure. In terms of analysis of the evolution from the financial crisis period to the current pandemic crisis, i.e. the period 2008Q2 compared with 2021Q2, Malta was the single one recording a decrease of its public debt weight, but very marginally only (-0.2), while Germany and Sweden recorded very low increases, single-digit. Conversely, Greece (103,5) and Spain (87,8) are the countries experiencing the highest increases. In the period 2019Q4, compared with 2021Q2, the variations are smaller, because the period of time in question is also very short, which in itself reveals that in the short term the variations may undergo a few positive or negative changes/oscillations, but not usually significant. The broad conclusion is that the pandemic has in fact worsened the EU economies financial conditions, making the inequalities between them even more evident, even though they are often partner economies, working together to mitigate the negative effects of the crises. Overall, when comparing with the period of inception of the Euro currency, after an initial stage of public debt increases, the financial crisis of 2008 led to a generic decrease of such levels. Nevertheless, as an aftermath of such dramatic crisis, during the following decade, the public debt levels would return to their increasing path. This led to overall debt levels on 2019Q4, just before the pandemic started, to be higher than just before the financial crisis evolved (2008Q2). Finally, as the pandemic worsened the economic and financial conditions in the EU, the public debt ratios would experience another layer of fast increase, leading to record high levels of public debt across most EU countries.

4. FROM THE FINANCIAL CRISIS TO THE PANDEMIC CRISIS: THE PUBLIC DEBT OF EUROZONE COUNTRIES

The financial crisis surged dramatically in 2008, but it would continue to evolve for many years, meaning that European Union countries continued to suffer from its negative spillover effects. The EU countries mostly began to feel these effects from the second quarter of 2008, which led to some very large insolvency and defaults on several types of debts, which subsequently led to a controlled containment of indebtedness by the most affected countries, through a scaling down of the overall debt stock. In some cases, as in Greece, Portugal, Spain and Italy, the effects of the crisis were so deep, that that recovery was necessarily to be very slow, leading inclusively to the need of a temporary increase of public debt, as some financial rescue plans were put in action as well. Such high public debt values took many years to reduce, as it was needed to wait for some stronger signs of financial and economic recovery. The persistent high unemployment figures were some of the most hard and slow economic indicators to recover. In resume, before it was possible to recover again, the EU countries had to suffer different recovery paces after the crisis, which can be explained by several factors, including the level of debt during the crisis and its progression, as well as the ability to recover from these same effects, the slow speed of action of monetary and governmental authorities, among others. The Figure 3 exhibits below a chart where one can observe the public debt for the Eurozone countries, for a period of over twenty years, from 2000 to 2020, with the second quarter of 2008 serving as index base 100.

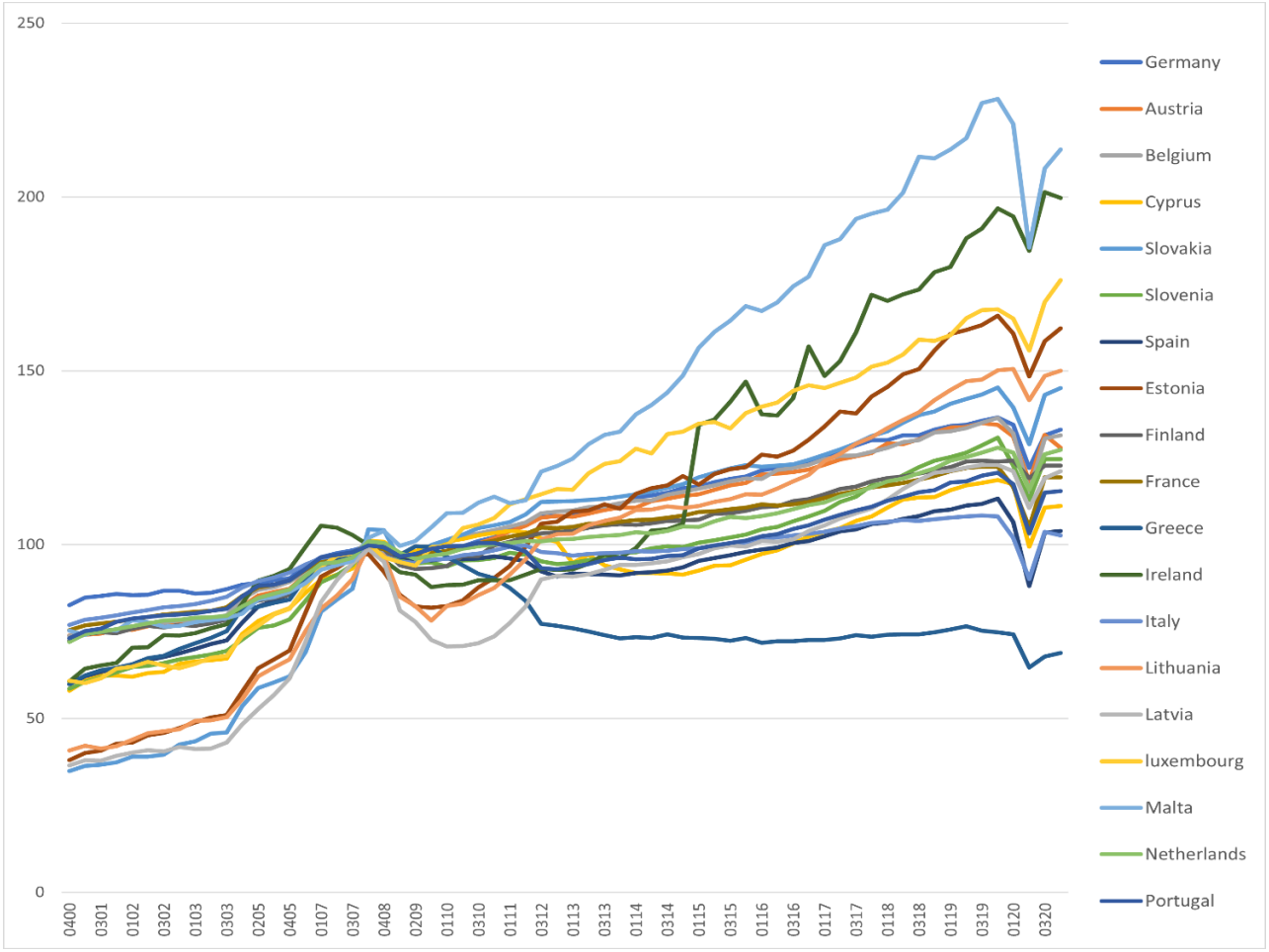

Figure 3: Financial Crisis: Public Debt of Euro area Countries, base quarter 02/2008 (base 100)
(Source: Eurostat, 2021)

The public debt figures in the early 2000s assume relatively low values for Estonia, Latvia, Lithuania and Slovakia. It is also noted that most countries have values in between 50 and 100, such as the case of Portugal, Italy and Luxembourg. From 2003 to 2008, the public debt increased significantly in most countries, with particular sharp rises in countries such as Latvia, Lithuania, Slovakia and Ireland. Nevertheless, in 2008, the year of the financial crisis and our base year for analysis, such public debt increases were suddenly halted, as debt markets collapsed and credit become basically frozen. As a consequence of such over-leveraging levels, in the following quarters the Eurozone countries reduced their debt levels, which stabilized after a few years. It was the time of implementation of austerity measures, leveraging was being naturally reduced. The decrease of most countries' debts became a reality. Over the following years, many of the countries continued to take measures to be able to stabilize and recover. Most countries needed a long period of time, of many years, before achieving the debt levels recorded before the crisis, as it can be observed in Figure 3. However, the pace of recovery was uneven. It should be noted that countries such as Malta, Ireland, Luxembourg and Estonia had great and fast recoveries of their public debt and GDP levels. In fact, it did not take long to surpass the pre-2008 levels. Furthermore, they quickly reached much higher values, never recorded before the crisis period. On the negative side, stands out Greece, which has not yet been able to return to the values recorded before the financial crisis. The Figure 3 also allows to observe the severe impacts of the recent pandemic crisis. Contrarily to the 2008's financial crisis, this time the response from the economic and monetary authorities was prompt and so consequently the recover.

5. FROM THE FINANCIAL CRISIS TO THE PANDEMIC CRISIS: THE PUBLIC DEBT OF NON-EUROZONE COUNTRIES

Similarly to the previous section of this paper, it is also of interest examining the evolution of the UE members states which did not adopt the Euro. The Figure 4, shown below, allows to observe the public debt evolution of the European non-Eurozone countries for a period of over twenty years, from 2000 to 2020, being the second quarter of 2008 the index basis (base 100).

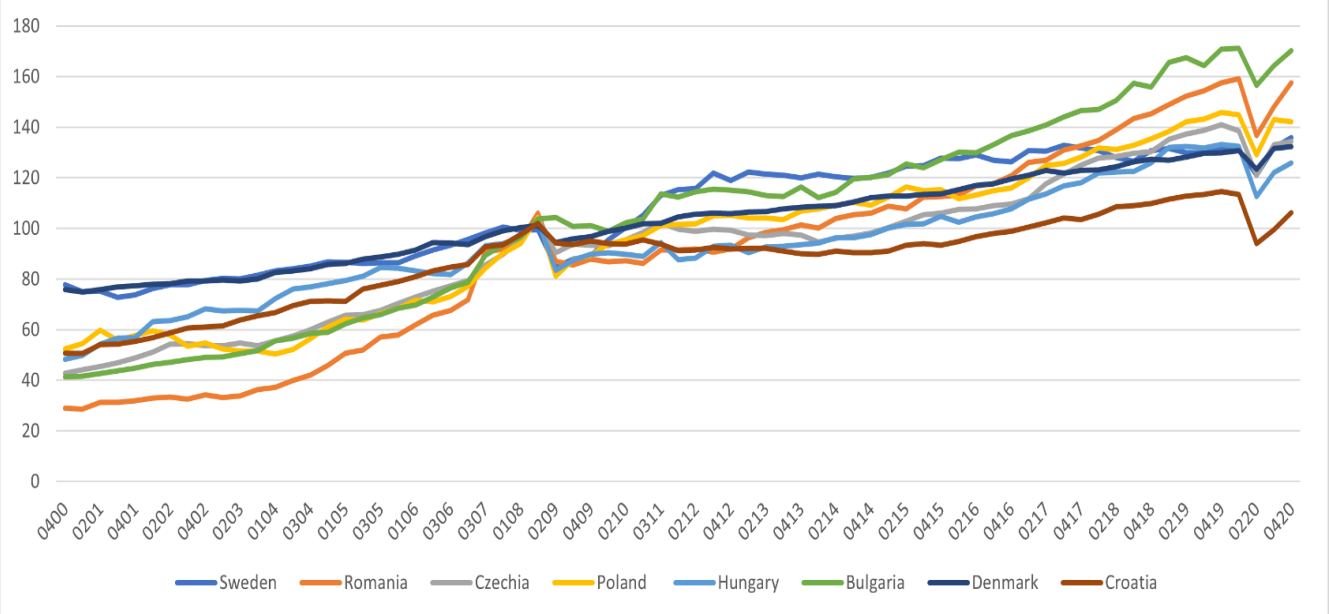

Figure 4: Financial Crisis: Public Debt of non-Eurozone Countries, base quarter 02/2008 (base 100)
(Source: Eurostat, 2021)

The low values of public debt of Romania stand out in the first years of analysis. Only from 2005 such low levels below to rise, before ending as second highest debt value in 2020. From lowest to almost the highest in less than two decades. Overall, as for Eurozone countries, the public debt levels rose until 2008. When the financial crisis started, every country reduced their public debt, taking at least a few quarters to recover the pre-crisis levels. Some countries took many years even to recover such levels. After the negative effects from the crisis started to mitigate, the non-Eurozone countries started to behave as the Eurozone ones. Nevertheless, the recovering was mostly slow, being the recovery in progress for many years following the start of the crisis. The positive highlights of faster recoveries go to Bulgaria and Romania. On the negative side, one can observe that, somewhat similarly to Greece, Croatia has been struggling to resume the public debt-GDP volumes activity achieved before the financial crisis.

6. CONCLUSION

It is being a millennium of crises over crises, and debt over debt, and, consequently, very much over-debt for the average of the EU and Eurozone countries. The over-leveraged financial crisis of 2008 was eased with more even more higher levels of debt. Additionally, the recent pandemic crisis led to even higher amounts of stock of public debt and other than public. Debt, debt, and more debt, seems to be the panacea for every crisis, whether financial or not. For the ease of the pain resulting from the crises, the European Central Bank eased its monetary policy to the extreme point of getting negative interest rates. Consequently, the EU member states received clear incentives to increase their debt levels. Gloomily, it was not enough to achieve significant average economic growth, but, nevertheless, allowed to mitigate the devastating effects of the severe crises that the Europeans and the citizens of the entire world lived throughout the first two decades of the millennium. From the examination of the data presented in this paper, one could perceive that the financial crisis has indeed had a very negative impact, both on the Eurozone and non-Eurozone countries, but the pace of the corresponding recoveries has been clearly differentiated, as some countries registered a fast recovery, while others suffered with a more gradual and slow recovery. So gradual it can be, that it is noteworthy to highlight that Greece and Croatia still continue to recover, to the point they did not reach the pre-crisis levels of public debt, a clear sign of a hard and slow way to a full economic recovery. In respect to this finding, it is important to recall that Greece had exceptionally high levels of public debt before the start of the financial crisis, which clearly was not the case of Croatia. Finally, regarding the Covid-19 pandemic, whose effects started to be clearly visible throughout the beginning of the year 2020, it is perceived once again that the EU countries recoveries are uneven, just like the during the 2008's financial crisis recovery processes. However, it is important to stress that almost every EU country is experiencing a notorious recovery, even if in some cases such recovery is not steady, reflecting the specific nature of the pandemic crisis and its unforeseen lockdowns.

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LITERATURE:

1. Amann, J., Middleditch, P. (2017). Growth in a time of austerity: Evidence from the UK. *Scottish Journal of Political Economy*: 349–375.
2. Azam, M., Ibrahim, Y. (2014). Foreign direct investment and Malaysia's stock market: using ARDL bounds testing approach. Journal of Applied Economic Sciences: 9(4)(30): 591-601.
3. Azam, M., Ather, M.A. (2015). Role of Human Capital and Foreign Direct Investment in Promoting Economic Growth: Evidence from Commonwealth of Independent States, International. Journal of Social Economics: 42(2): 98-111.
4. Azam, M., Hassan S., Khairuzzaman (2013). Corruption, Workers Remittances, FDI and Economic Growth in Five South and South East Asian Countries; A Panel Data Approach, Middle-East Journal of Scientific Research: 15(2): 184-190.
5. Azam, M., Ibrahim, Y., Bakhtiar, B. (2014). Foreign Direct Investment and Economic Growth in Asia, Actual Problems of Economics: 11(161): 58-67
6. Bernanke, B. S., Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. The Journal of Economic Perspectives: 9(4), 27–48.
7. Brida, J. G., Gómez, D. M., Seijas, M. N. (2017). Debt and growth: A non-parametric approach. Physica A: Statistical Mechanics and Its Applications: 883–894.
8. Burhanudin, M. D. A., Muda, R., Nathan, S. B. S., Arshad, R. (2017). Real effects of government debt on sustainable economic growth in Malaysia. Journal of International Studies: 161–172.
9. Cafiso, G. (2019). GDP Growth through Private Debt: The Effect of Monetary Shocks. Cesifo Economic Studies: 65(2): 236-253
10. Chiu, Y, & Lee, C.-C. (2017). On The Impact of Public Debt on Economic Growth: Does Country Risk Matter?. Contemporary Economic Policy: 751–766.
11. De Vita, G., Trachanas, E., Luo, Y. (2018). Revisiting the Bi-directional causality between debt and growth: Evidence from linear and nonlinear tests. *Journal of International Money and Finance*: 55–74.
12. Esteve, V., Tamarit, C. (2018). Public debt and economic growth in Spain, 1851–2013. *Cliometrica*: 219–249.
13. Eurostat (2021). Eurostat Statistics database. European Union statistics department. European Commission. Retrieved on several dates. Available at https://ec.europa.eu/eurostat/data/database
14. Intartaglia, M, Antoniades, A, Bhattacharyya, S. (2018). Unbundled debt and economic growth in developed and developing economies: an empirical analysis. *World Economy*: 3345–3358.
15. Levine, R. (2005). Finance and growth: theory and evidence, Handbook of economic growth 1: 865– 934.
16. Liaqat, Z. (2019). Does government debt crowd out capital formation? A dynamic approach using panel VAR. *Economics Letters*: 86–90.
17. Mhlab, N., Phiri, A. (2019). Is public debt harmful towards economic growth? New evidence from South Africa. *Cogent Economics and Finance*: 7(1).
18. Muhammad, A., Gavrila, L. (2015). Inward foreign capital flows and economic growth in African countries, Journal of Applied Economic Sciences: 3(33): 362-371.
19. Pegkas, P., Staikouras, C., Tsamadias, C. (2020). On the determinants of economic growth: Empirical evidence from the Eurozone countries. *International Area Studies Review*. 23(2): 219-229
20. Reinhart, C., Rogoff, K. (2010). Growth in a Time of Debt. American Economic Review. 100(2): 573-578.

21. Ribeiro, H., Vaicekauskas, T., Lakštutienė, A. (2012). The effect of public debt and other determinants on the economic growth of selected European countries. *Economics and Management*: 17(3): 914-921.
22. Snieska, V., Burksaitiene, D. (2018). Panel data analysis of public and private debt and house price influence on GDP in the European Union countries. *Engineering Economics*: 29(2): 197–204.
23. Srinivasan, P., Ibrahim, P. (2010). FDI and Economic Growth in the Asian Countries Evidence from Cointegration Approach and Causality Test. The IUP Journal of Management Research: 9(1): 38-63.
24. Srinivasan, P. (2011). Determinants of Foreign Direct Investment in SAARC Nations: An Econometric Investigation. The IUP Journal of Managerial Economics: 9(3): 26-42.

CONTEXTUAL APPROACH IN THE STUDY OF SOCIAL COMFORT

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ABSTRACT

The possibility of using a contextual approach to the characterization of the external conditions of social comfort is considered on the example of a comprehensive study of the living conditions of the population. The contextual approach is interpreted in terms of using the modified main component as a dimensionality reduction method to study the structure of the external context of social comfort. The level of social tension in the regions is analyzed as an external context. As part of the study, an integral indicator of social tension was calculated according to data for 2018, the division into groups was carried out according to the median value of the indicator and modeling of social comfort factors within a single group was carried out. It is shown that in a different context of socio-economic conditions, the strength and direction of the action of social comfort factors has distinctive features.

Keywords: *principal components analysis, social comfort, social tension, housing quality, region, labor market*

1. INTRODUCTION

In this study, as an alternative to measuring the well-being of the population, it is proposed to use a new category – social comfort. Shakleina et al., 2020 notes the need to introduce a new latent category to conduct operational monitoring, statistical specification, and main advantages. In assessing social comfort, the main role is given to contextual conditions of an individual's social life "motivating to various forms of positive activity and expressed in the balance of preferences, social properties of the environment and inclinations of the individual" (Leshchaikina, 2014). The analysis of the contextual conditions of the Russian Federation and its regions in the study of social comfort implies the study of external factors of the realization of an individual's social comfort, considering their interrelation and internal conditionality. Since the conditions of the external socio-economic context affect the behavior of an economic agent, it seems appropriate to analyze the category of "social comfort" and the degree of its achievement in the specific context of the socio-economic, cultural, and institutional environment. As a socio-economic context, this study uses a multidimensional phenomenon - social tension, which reflects the degree of dissatisfaction of the population with socio-economic living conditions (Glotov, 2019). Social tension reflects the mood of society, which is formed under the influence of many factors: economic, political, religious, etc. and opens painful points of society. The complexity and objectivity of this phenomenon justifies the need to use it as an external background for analyzing and modeling the level of social comfort of an individual's residence. The present study aims to determine statistically significant factors of social comfort in the context of the current level of social tension. The study can be presented in the form of the following iterative procedure:

- The first iteration is the calculation of the values of the integral indicator of social tension.
- The second iteration is the division of regions into two groups according to the median value of social tension.
- The third iteration is the definition of social comfort factors in the form of integral indicators.
- The fourth iteration is the construction of regression equations for two groups of regions according to the level of social tension.

2. METHODS

The methodology for determining the integral level of social tension is based on the methodology for calculating latent synthetic categories using a modified principal component method. Before calculating the values of the integral indicators, the values of the variables were transformed using the unification procedure to move to a dimensionless scale with a range of values [0, N]. This is because all variables have different units of measurement, and the use of other conversion procedures somewhat distorts the result, giving out, among other things, negative values of the transformed variables. For calculations, the indicators given in Table 1 were used. These variables allow for a comprehensive analysis of the level of social tension from the standpoint as contextual conditions of social comfort.

Table 1: Indicators used to determine the values of the indicator "Factors of social tension" (SocTens)

	Indicator	**Unit of measurement**	**Designation**
1.	Long-term unemployment rate (job seekers for more than 12 months)	% of all unemployed	$x(1)$
2.	Indicator of labor market tension	The number of unemployed per 1 vacancy, people.	$x(2)$
3.	Wage arrears (per one operating enterprise in the region)	Rubles	$x(3)$
4.	Number of crimes related to drug trafficking	Units per 10 thousand people .	$x(4)$
5.	Number of economic crimes	Units per 10 thousand people .	$x(5)$
6.	Number of serious crimes	Units per 10 thousand people .	$x(6)$
7.	The number of extremist crimes	Units per 10 thousand people .	$x(7)$
8.	The ratio of per capita monetary income and the subsistence minimum	%	$x(8)$
9.	The share of the population with monetary incomes below the subsistence minimum	%	$x(9)$
10.	The indicator of creditworthiness (the amount of debt in rubles and currency, per capita)	Rubles	$x(10)$
11.	The length of paved roads	Km per 1 km2	$x(11)$
12.	Change of tariffs for housing and communal services	% compared to December of the previous year	$x(12)$
13.	The cost of 1 liter of diesel fuel	Rubles	$x(13)$
14.	The cost of one liter of gasoline	Rubles	$x(14)$
15.	Provision of housing with water supply	%	$x(15)$
16.	Provision of housing with centralized sewerage	%	$x(16)$
17.	Provision of housing with centralized heating	%	$x(17)$
18.	Provision of housing with centralized hot water supply	%	$x(18)$
19.	Provision of housing with a bathroom (shower)	%	$x(19)$
20.	Provision of places for children under the age of 7 in preschool institutions	Units per 100 children	$x(20)$

Source: Comprehensive survey of living conditions of the population

Methodology for getting the Integral Indicator based on Principal Components analysis is given in (Aivazian, 2012).

The median value of the integral indicator of social tension is used as a boundary for dividing regions into groups. Social comfort is a complex latent category, which includes 12 blocks (Shakleina, 2020). For a detailed analysis in the context of Russian regions, we took only 4 blocks out of 12, which is due to the lack of initial representative information obtained as a result of surveys of respondents. The filling of the blocks with indicators is shown in Table 2.

Table 2: Composition of block indicators of social comfort

Block	Indicator
Labor activity, working conditions	Quite satisfied with earnings
	Quite satisfied with reliability of job
	Quite satisfied with duties
	Quite satisfied with working hours
	Quite satisfied with working conditions
	Quite satisfied with distance to the office
	High professional satisfaction
	High moral satisfaction
	Respondent has a very hard job
	Respondent is looking for a more suitable job
	Respondent has a job in the specialty
Housing, living conditions	Do not feel cramped
	Have a centralized water supply
	Have a centralized hot water supply
	Have metering devices for measuring the flow of cold water
	Have metering devices for hot water consumption
	Note the lack of heat
	Excess humidity, dampness are noted
	Note the lack of sunlight
Health and medical care	Good health
	Have chronic diseases
	Waiting for an ambulance for up to 20 minutes
Financial situation	Can pay for vital (essential) medicines
	Can cope with unexpected expenses (expenses for urgent housing repairs or replacement of durable items, urgent medical services, and so on)
	Can replace the simplest furniture that has fallen into disrepair
	Can buy new clothes for family members as they wear out
	Can buy each family member two pairs of comfortable and seasonally appropriate shoes (one for each season)
	Can allow food from meat, poultry or fish (or equivalent vegetarian food) every 2 days
	Can eat fruits at any time of the year
	Can invite guests to a family celebration (birthday, New Year, etc.)
	Can spend one week of vacation away from home every year (including time spent in a second home, with relatives, with friends)
	The minimum monthly income required by a household to "make ends meet" when buying the most necessary (on average per household)
	Had no debts on housing and communal services due to lack of funds
	Making ends meet with difficulties

Source: Comprehensive survey of living conditions of the population

According to the research algorithm presented above, block indicators will be constructed using the convolution method using a modified main component (Ayvazyan, 2012). Multiple regression and the least squares method are used to identify factors of reducing social tension.

3. RESULTS

The assessment of the level of social tension is a convolution of four block indicators: 1) the quality of housing, 2) social pathology, 3) crime and housing, 4) loans, fuel costs. The table 3 below shows the loads of private indicators, as well as the weight of the block as part of the summary indicator of social tension.

Table 3:Weights of indicators forming the indicator "Factors of social tension" (for year 2018)

Quality of housing		***Social pathology***		***Crime and housing and communal services***		***Credits and fuel costs***	
w(1) = 0,45		**w(2) = 0,21**		**w(3) = 0,18**		**w(4) = 0,15**	
Indicator	**Weight** $v_k^{(1)}$	**Indicator**	**Weight** $v_k^{(2)}$	**Indicator**	**Weight** $v_k^{(3)}$	**Indicator**	**Weight** $v_k^{(4)}$
$x^{(16)}$	**0,22**	$x^{(1)}$	**0,26**	$x^{(7)}$	**0,26**	$x^{(10)}$	**0,42**
$x^{(15)}$	**0,21**	$x^{(9)}$	**0,22**	$x^{(3)}$	**0,24**	$x^{(13)}$	**0,31**
$x^{(8)}$	**0,19**	$x^{(4)}$	**0,19**	$x^{(17)}$	**0,21**	$x^{(14)}$	**0,27**
$x^{(18)}$	**0,19**	$x^{(20)}$	**0,12**	$x^{(12)}$	**0,18**		
$x^{(19)}$	**0,12**	$x^{(5)}$	**0,11**	$x^{(6)}$	**0,13**		
$x^{(11)}$	**0,07**	$x^{(2)}$	**0,10**				

The main factor in the growth of social tension is the insufficient provision of housing with household infrastructure facilities. About 40% of residential premises in the Altai and Tyva Republics are provided with centralized sewerage. In Kurgan and Pskov regions - insufficient equipment of housing with centralized water supply (less than 60% of houses and apartments are equipped). It is obvious that in conditions not fully suitable for comfortable housing, citizens' dissatisfaction with the current situation is formed. A catastrophic level of poverty (consistently more than 35% of the total population) is observed in the Republic of Tyva. The Republic of Ingushetia is also among the regions with the highest level of poverty. In combination with the high values of the long-term unemployment indicator, in 2018, which is part of the second group, an extremely unfavorable socio-economic profile of this region is being formed. The group of variables with the greatest weight included in the final indicator confirms the hypothesis about the predominant role of living conditions and material security of the population in the context of the formation of social tension. Continuing the analysis further, we will divide the regions into groups using the median value of social tension.

Group 1 – regions with low social tension (Indicator of Social Tension - SocTens ≥ 6.24), a total of 41 regions: Belgorod Oblast (7.5), Bryansk Oblast (6.47), Vladimir Oblast, Voronezh Oblast, Kaluga Oblast, Kursk Oblast, Lipetsk Oblast, Moscow Oblast, Orel Oblast, Ryazan Oblast, Tambov Oblast, Tula Oblast, Yaroslavl Oblast, Moscow, Kaliningrad Oblast, Leningrad Oblast, Murmansk Oblast, Saint Petersburg, Republic of Adygea, Krasnodar Territory, Astrakhan Oblast, Volgograd Oblast, Rostov Oblast, Kabardino-Balkarian Republic, Republic of North Ossetia-Alania, Chechen Republic, Stavropol Territory, Republic of Bashkortostan, Republic of Tatarstan, Udmurt Republic, Perm Oblast, Nizhny Novgorod Oblast, Orenburg Oblast, Penza Oblast, Samara Oblast, Saratov Oblast, Ulyanovsk Oblast, Sverdlovsk Oblast, Tyumen Oblast, Chelyabinsk Oblast, Novosibirsk Oblast, Khabarovsk Territory.

Group 2 – regions with high social tension (Indicator of Social Tension - SocTens < 6.24), 40 regions in total: Ivanovo Oblast, Kostroma Oblast, Smolensk Oblast, Tver Oblast, Karelia, Komi, Arkhangelsk Oblast, Vologda Oblast, Novgorod Oblast, Pskov Oblast, Kalmykia, Republic of Crimea, Sevastopol, Dagestan, Ingushetia, Karachay-Cherkess Republic, Mari El Republic, Mordovia, Chuvash Republic, Kirov Oblast, Kurgan Oblast, Altai, Buryatia, Tyva, Khakassia, Saratov Oblast, Krasnoyarsk Territory, Transbaikal Territory, Irkutsk Oblast, Kemerovo Oblast, Omsk Oblast, Tomsk Oblast, Sakha (Yakutia), Kamchatka Territory, Primorsky Territory, Amur Oblast, Magadan Oblast, Sakhalin Oblast, Jewish Autonomous Oblast.

The expediency of modeling the factors of social comfort in the context of the current level of social tension is justified by several tests conducted. The Chow test (Ftest =2.86; p-value=0.03) confirmed differences in statistical estimates of coefficients for groups of regions with high and low social tension. Wald's test on the joint statistical significance of the products of the included factors on the binary variable of the level of social tension (dummy=1 if Me (SocTens)>=6.24; 0 - otherwise) also demonstrated the need to study two subsamples.

Table 4: Results of modeling factors of social comfort in the context of a certain level of social tension (SocTens)

SocTen	**Me>=6.24**				**Me<6.24**			
	Coef.	Std. Err.	t	P>|t|	Coef.	Std. Err.	t	P>|t|
House	-0.088	0.077	-1.150	0.259	0.466	0.090	5.160	0.000
Health	-0.012	0.052	-0.230	0.820	-0.098	0.084	-1.160	0.254
Finance	0.203	0.055	3.720	0.001	-0.065	0.096	-0.670	0.504
Work	0.147	0.062	2.350	0.024	-0.040	0.114	-0.350	0.727
_cons	5.519	0.516	10.700	0.000	3.716	0.774	4.800	0.000
Number of obs	41				40			
R-squared	0.318				0.454			
Adj R-squared	0.243				0.3916			
F(4, 36)	4.2				7.280			
Prob > F	0.0068				0.0002			

Source: author's calculations

The simulation results indicate the existence of statistically significant differences in the effect of social comfort factors. The following factors of social comfort – "Financial situation", "Work activity" – can be considered as determinants of reducing social tension in the first group of regions. At the same time, the factor "Housing, living conditions" is significant for the second group of regions. It should be explained why the sets of significant factors for the two subsamples do not coincide. The second group of regions is formed mainly by economically disadvantaged regions with low GRP and the standard of living of the population. The main factor of the expressed discontent of the population is dissatisfaction with basic needs, housing needs. In this regard, the understanding of social comfort within these contextual conditions is significantly narrower compared to the first group of regions. In a different context of socio-economic conditions, the strength and direction of the action of social comfort factors has distinctive features. In the second group of regions, the effect of the factor "Housing, living conditions" by absolute value exceeds the effect of the factors "Financial situation" and "Labor, working conditions". The proposed approach to the analysis of complex multidimensional categories at the regional level makes it possible to identify regions with a high risk of socio-economic tension and conflicts and to identify factors of social comfort that prevent the progression of this phenomenon in the future.

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LITERATURE:

1. Ayvazyan S.A. Analysis of the quality and lifestyle of the population: monograph Moscow: Nauka; 2012. 432 p.
2. Glotov V. I., Bakhtizin A. R., Volkova M. I. Social tension in the subjects of the Russian Federation. Analysis of causes and consequences //Federalism. – 2019. – №. 4. – Pp. 142-160.
3. Shakleina M. V., Volkova M.I., Shaklein K.I., Yakiro S.R. Theoretical and methodological problems of measuring social comfort: results of empirical analysis on Russian data //Economic and social changes: facts, trends, forecast. - 2020. - Vol. 13. - No. 5. - pp. 135-152.
4. Leshchaikina M.V. Cross-country econometric analysis of the social comfort of living of the population // Applied econometrics. 2014. No. 36 (4). pp. 102-117.

SUPPORT MEASURES DURING AND POST-COVID-19 TO PROMOTE BUSINESS MODEL CHANGES AND DIGITALISATION OF THE ENTERPRISES IN THE BIOECONOMY SECTOR

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ABSTRACT

The COVID-19 outbreak has lead to various changes in our daily lives and also in the way many businesses operate. Changes in the business model have been a must for many enterprises and whole sectors to continue their actions under the restrictions of COVID-19. These restrictions have influenced also the work of enterprises in the sector of bioeconomy – food producers, processers and distributors; producers, processors and distributors of manufactured goods like clothing or home goods and other bio-based sectors both in the stages of primary production and processing and distribution. Rapid digitalisation and digital transformation of enterprises and their operations had started before COVID-19, described as transition to Industry 4.0, but the enforced restrictions has certainly increased the need and motivation for using digital tools both for businesses and consumers. This study reviews the current and planned support measures for digitalisation of enterprises in the bioeconomy sector in EU and Latvia, also reviewing the support measures introduced during COVID-19 and their impact on the digital transformation of enterprises. We concluded that although there are several support programs that can be used for digitalisation, specifically targeted support measures for digitalisation are lacking especially among the COVID-19 support aid programmes.

Keywords: *support measures, digitalisation, bioeconomy, entrepreneurship, COVID-19*

1. INTRODUCTION

Bio-based resources are certainly significant for the self-sufficiency and global competitiveness of the EU and it`s member states. As with all the resources that are limited and extensively used, also with the use of bio-based resources the concerns with a sustainable and efficient use of these resources arise. Circularity, reuse of resources, modernisation of the production systems and use of the technology development to fully unlock the potential of the bioeconomy in Europe is crucial to sustain and renew the bio-resources and simultaneously increase the competitiveness. Technology development, innovation and digitalisation e.g. precision agriculture, sensor technologies, significantly increase the efficiency of the use of bio-resources like land or livestock, and also reduces the impact to the environment and climate. Digital transformation has been a the driving force of the Industry 4.0 – the fourth industrial revolution which is defined as a new level of organization and control over the entire value chain of the life cycle of products; it is geared towards increasingly individualized customer requirements the [1] and determined by the availability and use of data; the use of Internet of Things (IoT); information and communication technology (ICT) and other digital solutions that impacts the business performance in all stages of production cycle – starting from primary production,

processing and distribution. Industry 4.0 exposes new trials to enterprises, especially small and medium-sized enterprises (SMEs). Firms should advance approaches to achieve chances of innovation and digitalization; enlarge their processes; and define innovative business models [2]. European Commission has stated, that small- and medium-sized enterprises (SMEs) are the backbone of the European economy, making up 99.8% of all enterprises and two-thirds of employment [3] This is no different also in the bioeconomy sector, where SMEs already play a major role, but to increase their contribution, they need better advice and access to finance. [4] The European Economic and Social Committee (EESC) of the European Commission (EC) believes that setting up individual and flexible advisory services to help agri-food SMEs launch long-term, innovative projects is essential [4]. SMEs in many ways are quite resilient, sometimes even more so as the large enterprises, e.g. in terms of adaptation to change or financial stability. Jet often they lack capacity for investments in the digital technology and thus are not able to change their business model in respect to the economic changes enforced by customer demand or macroeconomic factors. Also due to the COVID-19 and the restrictions that are in force right now. In many occasions these enterprises also lack the skills to tackle the administrative bourdon they have to face when applying for the governmental or international support. These factors place the small and medium enterprises in a less advantageous position that would need to be recognized and support measures tailored in a way to be beneficial to this (very important) group of enterprises. Thus this study aims to assess the current and planned support measures for digitalisation of enterprises in the bioeconomy sector in EU and Latvia, also reviewing the support measures introduced during COVID-19 and their impact on the digital transformation of enterprises in the bioeconomy sector. It is done through a review of the available and planned support measures declared by the European Commission and Latvian governing institutions related to bioeconomy (e.g. Ministry of Economics; Ministry of Agriculture) as well as the regulatory framework of support measures related to digitalisation in the bioeconomy sector in Latvia.

2. DEVELOPMENT OF THE BIOECONOMY SECTOR IN EU AND LATVIA

According to the Bioeconomy Strategy of the EU, bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles. It includes and interlinks: land and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services [5]. These sectors have been a focus of the European policy for a decade now with a political decision to strengthen the bioeconomy sectors of EU as one of the fundamental resources for a sustainable growth [6]. Already now bioeconomy is providing over 18 million jobs in EU (with one million new green jobs expected by 2030, for example by developing new biodegradable products); bioeconomy provides over €2.2. trillion in annual turnover in the EU [7]. Agriculture and forestry cover 85% of EU territory and drive rural economies [8]. The economic and social significance of the bioeconomy sectors are substantial in all regions of EU, but the high intensity of use of the bio-based resources leads to sustainability challenges that EU is addressing through the European Green Deal and the Farm to Fork Strategy in relation to agriculture and food leading to reforms in Common Agriculture Policy [9,10,11]. Agriculture and food production takes the largest share in the EU bioeconomy (fig. 1) – according to data for 2017 it is 68.66%. The turnover of food, beverage and tobacco industry is 49.97% of the whole bioeconomy in EU which makes €1.1 trillion, most of the turnover is in food production, €930 billion; €154 billion in beverage production and €30 billion in tobacco production. Agriculture takes the second largest share in bioeconomy of the EU – 18.69% or €417 billion in turnover in 2017.

These two largest sectors in turnover are followed by bio-based chemical sector (8.08%), paper production industry (7.85%) and production of wood products and furniture (7.76%). A similar structure can be noticed if the value added is analysed in bioeconomy – in 2017 the total value added is €614 billion, most of it is in food, beverage and tobacco production (€215 bil) and agriculture (€188 bil). Each of these sectors makes about 1/3 of the whole value added in bioeconomy leaving 1/3 to the rest of the sectors combined. In this group the largest value added is in the bio-based chemicals sector (€60 bil), production of wood products and furniture (€47 bil) and paper industry (€41.7 bil).

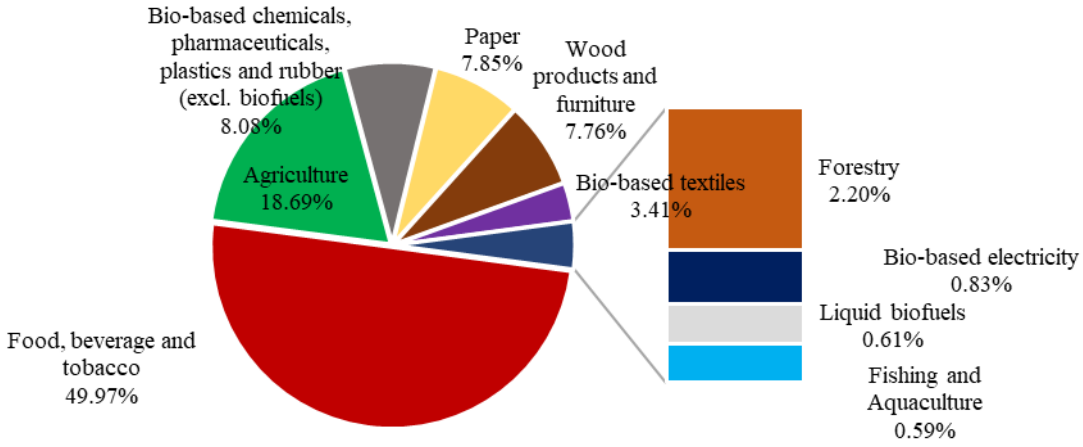

Figure 1: Turnover in the bioeconomy by sectors in EU27, 2017 (Source: DataM JRC, 2021)

If we look at the employment of the bioeconomy sectors (fig.2), we can see that it is even more dominated by agriculture and food production, which combined makes 78% of the whole employment in bioeconomy. In 2017 there were 17.5 million people employed in bioeconomy of the EU, 9.27 million were employed in agriculture and 4.4. in food production.

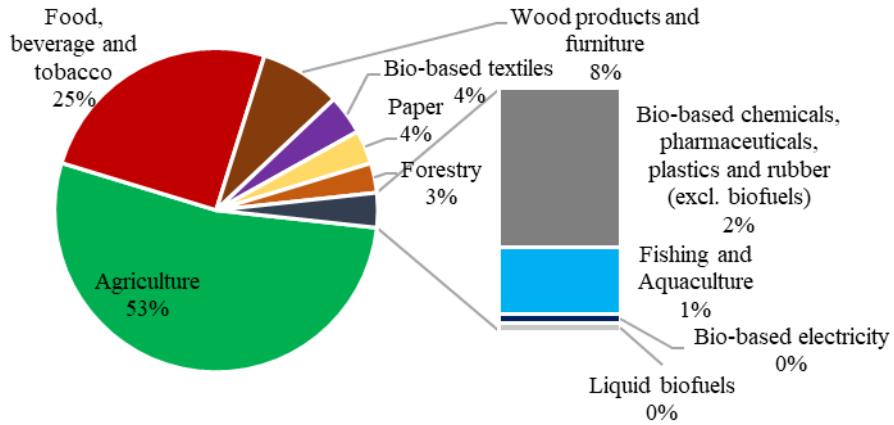

Figure 2: Employment in the bioeconomy by sectors in EU27, 2017 (Source: DataM JRC, 2021)

Considering the large share of agriculture and food production in bioeconomy and also in the whole economy of the EU (and the influence of the life quality of all EU citizens), the pressure to address the issues of these two sectors are well justified. Over half of the adult population are now overweight [12], and 20% food is wasted [13], jet 33 million people cannot afford a quality meal in EU [14] and even if the people can afford a nutrient dense food, this option is not always the easiest one, leading to the people being both overweight and also malnutritious.

This is just one of the struggles among climate footprint, fair support measures to farmers, reduction of biodiversity and necessity to increase the animal welfare etc. [10] that food sector in EU is facing. A change in the consumer behaviour and diet; in the way many businesses operate; in practices of how the food is produced and how it is delivered to customers – all these processes together would make an impact on a healthier and more sustainable agriculture and food sector in EU and digital tools like precision technologies, IoT and big data analysis in the production and processing stage; and the use of digital solutions like various applications of e-commerce (direct sales, e-farmer markets, food planning apps, online meal kits) would all contribute to a wider availability of nutrient dense foods, an easier, more convenient access to food, more access to baying food directly from food producers - farmers and small food production enterprises.

2.1. Bioeconomy sector in Latvia

In the analysis of the structure of turnover in bioeconomy in Latvia (fig.3) for 2017, it can be observed, that largest share of turnover is in the wood products and furniture production – 32.59% or €2.4 bil (mainly wood products). Followed by food, beverage and tobacco production (26.56%) and agriculture (20.84%). A comparably large share in the structure of turnover is also taken by forestry – 14%, and other sectors constitute only of less than 6%.

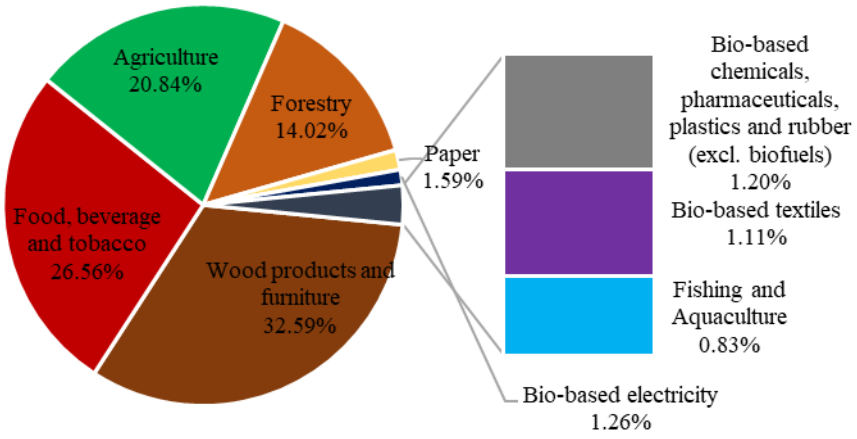

Figure 3: Turnover in the bioeconomy by sectors in Latvia, 2017
(Source: DataM JRC, 2021)

The analysis of employment of the bioeconomy sectors in Latvia shows (fig.4), that from the whole 126.3 thousand people employed in bioeconomy, 55.56% or 70 thousand people of the people are employed in agriculture and food production (46.42k in agriculture and 23.76k in food production), which is significantly less than the EU average of 78%, a large share of people employed in the bioeconomy sector are employed in production of wood products and furniture (23.46%; 29.63k). Also forestry, which is closely linked with wood production sector employs a comparably large share of people or 13.63% (17.22k).

Figure following on the next page

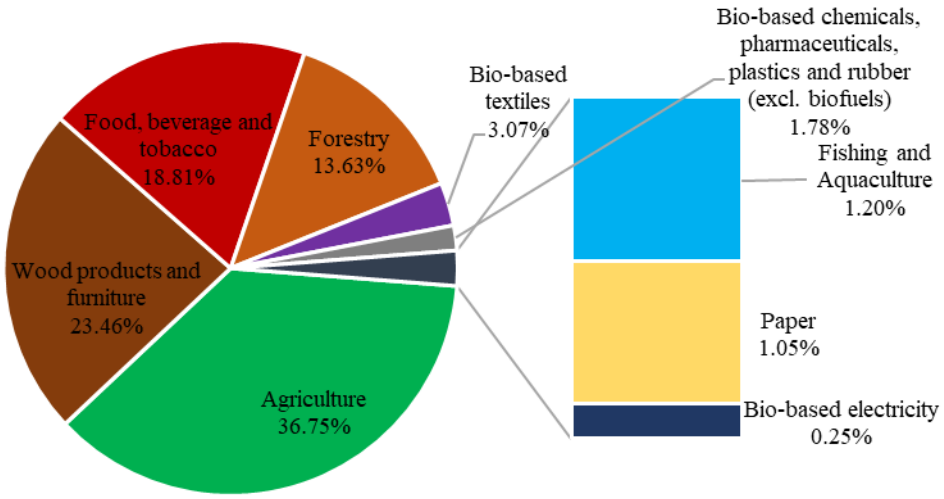

Figure 4: Employment in the bioeconomy by sectors in Latvia, 2017
(Source: DataM JRC, 2021)

The review of data about the size of enterprises in the main bioeconomy sectors in Latvia indicate, that bioeconomy is dominated by small enterprises, especially in agriculture, the sector with the largest amount of enterprises in amongst bioeconomy sectors, in which 98% of all enterprises are small enterprises with the number of employees from 0-9.

2.2. Digital transformation of the bioeconomy sector and business model changes related to the effects of COVID-19

The digitalisation aspects in EU are reflected by the Digital Economy and Society Index (DESI) which is calculated annually and reveals the digital transformation progress made in the EU member states. The latest 2020 DESI report was based on 2019 data, i.e. before pandemic restrictions were introduced (fig.5)[16].

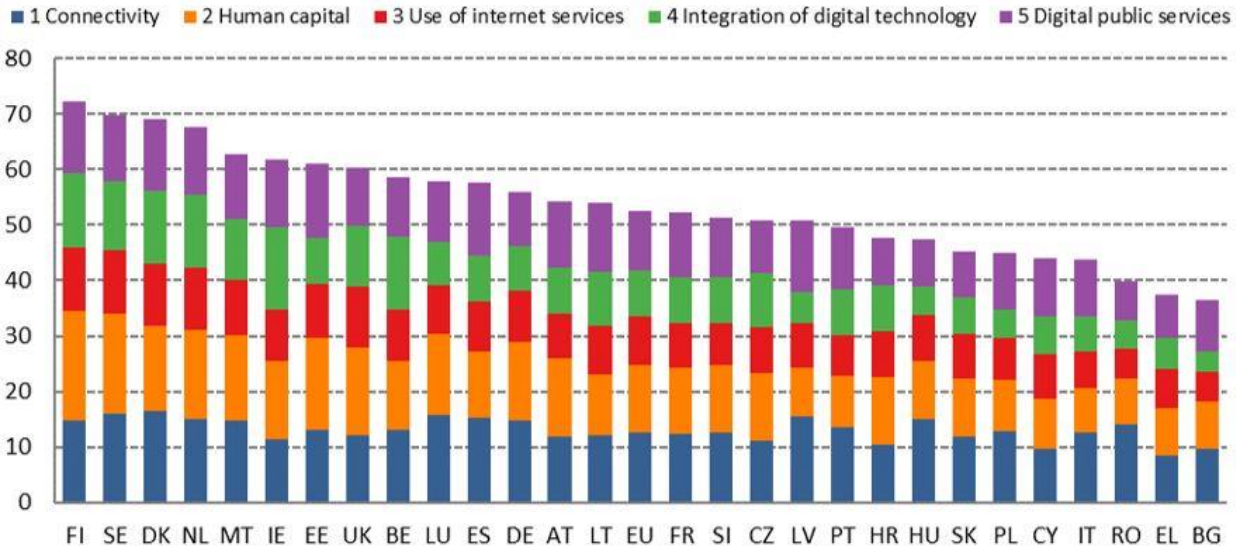

Figure 5: DESI for EU member states in 2020 (2019 data)
(Source: European Commission, 2020)

Overall, Finland, Sweden, Denmark and the Netherlands are leaders in the European Union in terms of digital performance. They were closely followed by Malta, Ireland and Estonia.

The International Digital Economy and Society Index (I-DESI) indicated that the best-performing EU member states were also leaders on a global scale. The largest EU economies were not digital leaders, suggesting that the digital transformation needs to be accelerated in order for the EU to successfully implement both the digital and the green transformations. Over the last five years, Ireland made the most progress, followed by the Netherlands, Malta and Spain. The performances of these member states were also well above the EU average in DESI (European Commission, 2020). However, the performance of Latvia was slightly below the EU average, and Latvia had a high score in the digital public services dimension, yet it lagged most significantly behind the EU average in the human capital dimension (use of the Internet, basic digital skills and advanced digital skills) and the integration of digital technology dimension (business digitalization and e-commerce). It would therefore be very important to target support instruments to contribute to these two dimensions. The EU DIGITAL programme, in relation to several of its activities, focuses on small and medium enterprises, and it is a segment of companies that makes a very significant impact on the overall digitalization of the business environment and also most often lacks the skills and resources to invest in digitalization solutions (especially companies in regions), so the focus on SMEs is very important. An analysis of the e-commerce indicators of DESI revealed that Latvia lagged behind the EU average both in terms of share of online shoppers among other shoppers and in terms of amount of money spent (Eurostat, 2021). However, an analysis of the field of the bioeconomy revealed that in relation to the mentioned product groups, Latvian shoppers lagged behind the EU average and very significantly behind the Netherlands, Denmark and Germany. In recent years, online shopping for goods increased also in the mentioned product groups, and an increase in the demand for domestically produced food purchased online provided new opportunities for farmers, food producers and retailers, especially during the COVID-19 period [6]. In 2020, a third of Europeans bought food online, in the Netherlands and Denmark it was 60% and 57%, respectively, which was definitely a large quantity of food and meals purchased online and important for the bioeconomy sector as a whole. It also indicated the willingness and readiness of consumers to buy food online, which would likely to lead to broader changes in the business pattern for food and meal retailers across all EU member states, incl. in those where the supply of food online was insufficient, such as in Latvia, where only 12% purchased food online [6].

3. REGULAR AND COVID-RELATED SUPPORT MEASURES INTRODUCED FOR THE ENTERPRISES IN THE BIOECONOMY SECTOR IN LATVIA

Support to digitalisation in the bioeconomy sector is accessible through several support measures, and it is in line with the EU targets regarding digital transformation of enterprises in all sectors. Also several of the support programmes are targeted specifically to the small and medium enterprises thus recognizing both their digitalisation struggles and their potential in the digital world. Those programmes include actions like training and improving digital competences [17,18], also developing new technological solutions and participation in global digital platforms and events. More specifically to agriculture the supported actions include investment support and modernization (that may include digital solutions and investments in technological solutions, incl. software). Also development of new products and expanding to new markets. Specific support programmes are also available to fisheries and aquaculture despite this sector being comparably smaller, it is viewed as one of the bio-based sectors with a development potential in Latvia. Similarly to the supported actions in agriculture, also in fisheries most of the support that can be linked with digitalisation is meant for modernization of production facilities (like ports, fish procession facilities) a designated support action is for the creation of the added value and development of innovation in all phases of fishing chains [19].

The analysis of the support programmes available to the bio-based sectors (tab.1) indicate that there are several support actions currently available that may be directly or indirectly linked to digital transformation, but in many cases the including digital aspects in the use of the support is not specified.

Sector	Number of support programmes and initiatives currently available	Estimated funding available, million euro
All sectors (limits to fisheries and primary production in agriculture may apply in some programmes)	11	242.9
Agriculture and food production	7	282.27
Fisheries and aquaculture	9	85.92

Table 1: Support measures in the sectors of bioeconomy in Latvia (Source: author`s construction)

Apart from the regular support measures for the enterprises in Latvia, COVID-19 restrictions affected several sectors, like the tourism industry, catering services in schools during distance learning, restaurant industry and some of the sectors of agriculture. The first phase of restrictions (and support measures) in Latvia were from the March of 2020 till the April of 2021 (tab.2)[20, 21], although some of the restrictions remained, they were eased. In this period several specific support measures were introduced, such as financial support for the cover of losses for sectors which were not able to operate during restrictions. Even thou the operations of enterprises of the agriculture sector were not stopped, COVID-19 affected also this sector therefore a fixed amount of support was provided for a set of enterprises in agriculture. The *post-factum* analysis indicate that actually COVID-19 might not have affected agriculture enterprises as much as foreseen [22]. The support measures also included support for loan payments, insurance payments, current assets and salary subsidy. But the COVID-19 support that is introduced right now (in October, 2021) [23] includes only two support measures – support for current assets and salary subsidy. These support measures also have a highest limit of support – 700 euro for salary payments and 100 000 euro for current assets (such limits were not applied in the first phase of COVID-19 support). It is foreseen that the lockdown in the autumn of 2021 will not be extended for more than a month, therefore the support payments are fairly limited comparing to the variety of support measures that were available in the first phase of COVID-19 related support.

Means of financial support/ support periods	Financial support (cover of losses)	Support for loan payments	Support for insurance	Support for current assets	Salary subsidy	Investment support	Support for innovations and competitiveness (inc. digital tools&education)
COVID -19 support from March of 2020 till April 2021	x specific measures applied to ag and food prod.	x	x	x	x		
COVID-19 support from October 2021				x	x		
Regular support programmes		x	x	x		x	x

Table 2: Support measures in the sectors of bioeconomy in Latvia (Source: author`s construction)

Overall the support measures in both periods when they were applied show, that they are targeted to support the enterprises during the restrictions, but they miss the opportunity to support the enterprises in the changes of their business model and adapting to the new market situation. In many cases this was exactly through the use of digital tools, for example a food booking app for a catering enterprise, that would allow it to continue its business during the restrictions and it would 1) keep the business alive and working; and 2) promote the adaptation of a business model that is more suitable for the current situation with a long lasting positive effect on the performance of the particular enterprise. In the study of EU enterprises in the COVID crises Juergensen et al states, that the policy mix will need to shift from its initial focus on the survival of European SMEs in the short term, towards a more structural and longer-term approach based on promoting their renewal and growth through innovation, internationalization and networking [24]. And these are indeed the aspects that would need to be considered both in the long term and short term support actions and also in planning and implementation of the support measures in the EU's long-term budget, coupled with NextGenerationEU (NGEU), the temporary instrument designed to boost the recovery post-COVID-19. Which is intended as the large stimulus package (a total of €2.018 trillion) to help rebuild a greener, more digital and more resilient post-COVID-19 Europe [25]. In post-COVID economic recovery measures, it would be advisable to include the measures that directly relate to fostering the digitalization of enterprises, incl. in the bioeconomy sector. The recent years, with COVID-19 social distancing measures imposed across the EU, highlighted new trends in consumer behaviour: the range of shoppers using e-commerce and the range of goods shoppers wanted to buy online (including food, food delivery) expanded. The new trends could be observed both in the EU member states, as well as in the Baltic States and Latvia. The limitations of COVID-19 stimulated a shift in the business pattern of many companies, and the changes needed to be addressed at the early stages of the COVID-19 crisis. However, even today, this kind of support would be useful for companies wishing to change their business pattern to include an opportunity for online shopping for goods and services, especially given a scenario of the need to extend restrictions in autumn-winter months to some extent in the future is possible. Small and medium enterprises in the bio-based sectors would in many cases benefit from a relatively small financial aid (e.g. up to EUR 5000) with a very simplified administrative procedure and the aim of implementing and developing digital solutions in companies, e.g. a platform for selling goods or ordering food, setting up an online store (including preparation of photos for e-commerce platforms such as etsy.com). The creation of high-quality websites and social media accounts and the preparation of photos and videos to supplement the online content are also important for micro- and small enterprises, especially in the regions of Latvia. Such activities require relatively small financial investments, yet in combination with training for company managers and employees the activities could make a significant contribution to improving the competitiveness and export capacity of these businesses.

4. CONCLUSION

An analysis of the support instruments introduced in Latvia in 2020 and 2021 due to COVID-19 revealed that they focused on providing support to companies affected by the COVID-19 crisis, e.g. through applying instruments such as salary subsidy, partial compensation for loan interest, extension of tax payment deadlines, grants for current assets etc. The mentioned support instruments have clearly been needed by many companies in difficulty, yet it would have been useful to introduce support instruments for change and development, incl. implementation of digital solutions in companies, e.g. the development and implementation of food ordering systems and applications for catering companies or the development of online platforms for agricultural and food producers and distributors.

Therefore, it could be concluded that the mentioned opportunities to support companies to change their business model in the crisis have remained unutilised and should be considered when planning future support measures.

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LITERATURE:

1. Saurabh V., Prashant., Santosh. (2018) *Industry 4.0 – A Glimpse.* Procedia Manufacturing, Vol 20, pp 233-238, ISSN 2351-9789, available: https://doi.org/10.1016/j.promfg.2018.02.034.
2. Zambon, I., Egidi, G., Rinaldi, F., Cividino, S. (2019) *Applied Research Towards Industry 4.0: Opportunities for SMEs*, Processes, 7(6), 344, available: http://dx.doi.org/10.3390/pr7060344.
3. European Commission. (2019). Annual report on European SMEs 2018/2019 Research and Development and Innovation by SMEs, Luxembourg.
4. SMEs should play a greater role in the bioeconomy (2019) The European Economic and Social Committee of the European Commission, available: https://www.eesc.europa.eu/en/news-media/news/smes-should-play-greater-role-bioeconomy
5. Sustainable Bioeconomy for Europe: Strengthening the Connection Between Economy, Society, and the Environment, Updated Bioeconomy Strategy (2018) Directorate-General for Research and Innovation (European Commission), available: https://op.europa.eu/en/publication-detail/-/publication/edace3e3-e189-11e8-b690-01aa75ed71a1.
6. Zeverte-Rivza S., I.Gudele, (2021) Digitalisation in Times of Covid-19 - the Behavioural Shifts in Enterprises and Individuals in the Sector of Bioeconomy In: Proceedings of the International scientific conference "Economic science for rural development", Jelgava / Latvia University of Life Sciences and Technologies, vol 55, pp 42-51, DOI: 10.22616/ESRD.2021.55.004
7. Jobs and Wealth in the European Union Bioeconomy (2021) Data-Modelling platform of agro-economics research, JRC, European Commission, available: https://datam.jrc.ec.europa.eu/datam/mashup/BIOECONOMICS/
8. FOOD, BIOECONOMY, NATURAL RESOURCES, AGRICULTURE AND ENVIRONMENT (2019) European Commission, available: https://ec.europa.eu/info/sites/default/files/research_and_innovation/knowledge_publications_tools_and_data/documents/ec_rtd_factsheet-food-bio-resources-agri-envi_2019.pdf
9. The European Green Deal (2019) European Commission, available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640
10. Farm to Fork Strategy (2020) European Commission, available: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fec.europa.eu%2Ffood%2Fsystem%2Ffiles%2F2020-05%2Ff2f_action-plan_2020_strategy-info_en.pdf&clen=5084315&chunk=true
11. Analysis of links between CAP Reform and Green Deal (2020) COMMISSION STAFF WORKING DOCUMENT, European Commission, available: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fec.europa.eu%2Finfo%2Fsites%2Fdefault%2Ffiles%2Ffood-farming-fisheries%2Fsustainability_and_natural_resources%2Fdocuments%2Fanalysis-of-links-between-cap-and-green-deal_en.pdf&clen=878952&chunk=true

12. Obesity rate by body mass index (2020) Eurostat, available: https://ec.europa.eu/eurostat/databrowser/view/sdg_02_10/default/table?lang=en
13. Estimates of European food waste levels (2016) EU FUSIONS, available: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.eu-fusions.org%2Fphocadownload%2FPublications%2FEstimates%2520of%2520European%2520food%2520waste%2520levels.pdf&clen=2615194&chunk=true
14. EU SILC (2018) Eurostat, available: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_mdes03&lang=en.
15. Economically active enterprises of market sector in regions, cities and municipalities by size group according to the number of employees and main economic activity (NACE Rev. 2) 2013 – 2019 (2020) Central Statistical Bureau of Latvia, available: https://data.stat.gov.lv/pxweb/en/OSP_PUB/START__ENT__UZ__UZS/UZS030/
16. Digital Economy and Society Index (DESI) 2020 (2020) European Commission, available: https://eufordigital.eu/wp-content/uploads/2020/06/DESI2020Thematicchapters-FullEuropeanAnalysis.pdf, Access: 05.03.2021.
17. Amendments of the Regulation of the Cabinet of Ministers 27.10.2015. no. 617 (2019) (in Latvian) available: https://likumi.lv/ta/id/306689-grozijumi-ministru-kabineta-2015-gada-27-oktobra-noteikumos-nr-617-darbibas-programmas-izaugsme-un-nodarbinatiba-1-2-2-specifis...
18. Regulation of the Cabinet of Ministers 14.06.2016. no. 365 (2016) (in Latvian) available: https://likumi.lv/ta/id/282904-darbibas-programmas-izaugsme-un-nodarbinatiba-1-2-2-specifiska-atbalsta-merka-veicinat-inovaciju-ieviesanu-komersantos
19. Redistribution of funds in European Maritime and Fisheries Fund (2020) Ministry of Agriculture (in Latvian), available: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.vmd.gov.lv%2Fpublic%2Fck%2Ffiles%2FZM%2Fzivis%2Fzkp%2F2_1_pielikums_EJZF_pardales_14_20.pdf&clen=133054&chunk=true
20. Support possibilities for overcoming issues caused by COVID-19 (2021) State Revenue Service (in Latvian), available: https://www.vid.gov.lv/lv/covid-19
21. Support measures for reducing the effects of COVID-19 and recovery (2020) Ministry of Agriculture (in Latvian), available: https://www.zm.gov.lv/public/ck/files/Atbalsts%20lauksaimniekiem%20COVID19_21122020.pdf
22. The COVID-19 support for agriculture has served as an instrument for increasing profit (2021) The State Audit Office (in Latvian), available: https://lvportals.lv/dienaskartiba/326919-lauksaimniekiem-pieskirtais-covid-19-atbalsts-faktiski-kalpojis-ka-ienemumu-palielinajuma-instruments-2021
23. Government approves current asset and salary subsidy support programmes for the enterprises affected by COVID-19 (2021) Ministry of Economics (in Latvian), available: https://www.em.gov.lv/lv/jaunums/valdiba-apstiprina-apgrozamo-lidzeklu-un-subsideto-darba-algu-atbalsta-programmas-covid-19-ietekmetajiem-uznemumiem
24. Juergensen, J.; Guimón, J.; Narula, R. European SMEs amidst the COVID-19 crisis: Assessing impact and policy responses. J. Ind. Bus. Econ. 2020, 47, 499–510, doi:10.1007/s40812-020-00169-4.
25. Recovery plan for Europe (2020) European Commission, available: https://ec.europa.eu/info/strategy/recovery-plan-europe_en

THE ANALYSIS OF THE ACTIVITY ON SOCIAL NETWORKS FACEBOOK AND TWITTER OF DIPLOMATIC AND CONSULAR MISSIONS OF THE REPUBLIC OF CROATIA IN THE YEAR 2020

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ABSTRACT

Social networks have become a necessary tool in personal and professional communication in all spheres of life, including diplomacy. Diplomatic communication in the era of modern technology has transformed and developed into a „digital diplomacy", which does not mean that the forms of classical (traditional) diplomatic communication are completely abandoned. New technologies have resulted in changes in political communication in which even the highest state officials are active on social media, making them one of the most frequently used communication channels. Through social networks, officials communicate directly and sometimes very intensively with the public. With a functionally deductive approach, several methods were used in order to obtain relevant data. Due to the relatively small sample, the way of using social networks by Croatian diplomatic and consular missions was qualitatively researched. There were several research methods in this paper. Description method describes the relevant paradigm comparison method were investigated similarities and common features, and statistical methods numerically and graphically presented research results were obtained. The subject of the research is the social networks Facebook and Twitter, and the time frame of the research is the year 2020.

Keywords: *social media, digital diplomacy, Facebook, Twitter, Croatian diplomatic and consular missions*

1. INTRODUCTION

The impact of social networks on all areas of our lives is growing day by day. Keeping up with the world, informing and being informed daily becomes a priority. Getting information and being informed is crucial on a personal and professional level in all spheres of social and political life, including diplomacy. Over time, the modernization of society has led to the modernization of diplomacy, which has in large degree „moved" to the Internet. As the result, digital diplomacy has developed, which according to many experts is more transparent, inclusive and open, and the use of the Internet as a tool of communication is both much faster and easier, which makes it perfect for modern diplomacy. Traditional forms of diplomacy will not disappear with the emergence of new forms of diplomatic communication, but it shows an indicator of how the political world is trying to keep up with modern times and its benefits. This paper investigates and analyzes the existence of profiles of Croatian diplomatic and consular missions and their published content on social networks. For research purposes, two social networks (Facebook and Twitter) were selected. The analysis of active profiles and pages included: activity on social networks, number of followers, the language of published content,

and the sum of all posts on social networks in the analyzed year (2020, 366 days). Before presenting the results of the research, the paper contains a brief theoretical overview of digital diplomacy and its growing impact on politics through using social networks. Before presenting the results of the research, the paper contains a brief theoretical overview of digital diplomacy and its growing impact on politics through using social networks. In the conclusion, alongside an overview of everything written, the conclusion shows whether the set hypothesis are confirmed or refuted.

2. CONTEMPORARY DIPLOMACY IN THE AGE OF SOCIAL NETWORKS

In using social networks in politics, the work and activities of public figures are brought closer to the public, who can read the latest information right after making the information public, but also to the media which can transmit official announcements in their printed and digital editions. According to Marks (2020), diplomacy is „an established method of influencing the decisions and behaviour of foreign governments and peoples through dialogue, negotiation and other measures than war or violence.“ The term 'diplomacy' also includes the ability, knowledge and skills to negotiate with other countries, as well as data collection, analysis and reporting. There are many reasons why diplomacy is important in the contemporary world, but Berković (2006: 9) states that diplomacy is important because „today there is almost no area of human activity that is not the subject of international relations, as well as diplomatic activity“. With the new, modern times, the notion of traditional or classical diplomacy has changed. At its core, traditional diplomacy involves reasonable negotiation that most often takes place hidden from the public eye. However, with the advent of the Internet and social networks, the way of conducting negotiations has somewhat changed alongside the rise of digital, ie modern diplomacy. According to Urlić (2014), digital or modern diplomacy represents a change in content and strategy. Digital diplomacy creates a new way to implement traditional democratic methods, develops new technological policy solutions and encourages online activism. The term was also defined by Rashica (2018: 77) who states that digital diplomacy is „a form of new public diplomacy that uses the Internet, new information and communication technologies and social media as a means to strengthen diplomatic relations.“ When talking about digital diplomacy, the term that can be connected with it is contemporary diplomacy. Ritto (2014) explains contemporary diplomacy as new a method that is „more inclusive, open and transparent than the diplomacy used in the past, which was more secretive and exclusive, discreetly operating behind closed doors.“ The relation between traditional and digital diplomacy is interesting to study because of its differences. As the main difference between these two diplomacies, Rashica (2018: 77) states that digital diplomacy gives access to more information increases interactivity between individuals and organizations and is more transparent. However, it needs to be stated that the successful implementation of digital diplomacy requires certain skills that go beyond the usual ones, as diplomatic representatives have to be media literate. Besides mentioned, „moving“ diplomatic activity to the virtual world has its positive sides and goals, along with potential risks. Viona Rashica (2018:77) referred to some of these elements, highlighting the following goals of digital diplomacy: *knowledge management, public diplomacy, information management, consular communication and response, disaster response, freedom on the Internet, external resources, policy planning.* In addition to highlighting the goals of digital diplomacy, Rashica (2018:78-79) also singled out 25 points of the effectiveness of digital diplomacy, further divided into six groups. These groups include: a) security, b) organization and management, c) training and support for digital diplomats, d) content, context and failure, and e) planning in advance. Stated groups explain the functioning of digital diplomacy because they cover the advantages and disadvantages, ie risks of digital diplomacy. Even though digital diplomacy has many advantages, it also has risks. Bjola (2019) wrote about the risks, or as he put it, the dark side of digital diplomacy.

He directly compares the advantages of digital diplomacy with its disadvantages. Bjola (2019) claims that the same tools that enable communication with millions of people and built and strengthen „international cooperation, improve diaspora engagement, foster trade relations or manage the international crisis“ can also be used in the form of so-called „hard power“. He adds below that this form can be used to „breakthrough, penetrate and perforate the political and information environment in the target countries“, thus undermining the political and social fabric of those countries.

3. SOCIAL NETWORKS AS AN INCREASINGLY IMPORTANT TOOL OF POLITICAL COMMUNICATION WITH THE PUBLIC

Social networks are tools through which we review and publish various content. Also, they are tools through which we inform ourselves, discuss and follow people and content that interest us. Experts in the field of political communication and marketing recognized increased interest in using social networks and decided to „move“ political content to a virtual edition. By using social networks, political officials can communicate faster, continuously and intensively with the public. The fact is that almost all the most high-ranking political officials are present and active on social networks. So-called „Twitter President“ Donald Trump, the current US President Biden and Vice President Harris are active on social networks. Even though, Trump was „cancelled“ and removed from social media due to his attitude and posts he shared. Alongside them, on social networks, there are active profiles of some high-ranking state officials. Such as soon retired German Chancellor Merkel, British Royal Family, French President Macron, Russian President Putin and Canadian Prime Minister Trudeau. In addition to this, we must not leave out Croatian politicians who are active on social networks – President Milanović, Prime Minister Plenković, President of the Croatian Parliament Jandroković and many more. There are so many politicians active on social networks that we could write many pages, and this large number shows how social networks became crucial in political communication, just as they are important in digital diplomacy. The whole story with social media and politics reached its full potential during the 2016 US presidential election. Primary candidates were Donald Trump on behalf of the Republican Party and Hillary Clinton on behalf of the Democratic Party. Both candidates used social networks the most to promote their campaigns. This statement coincides with the research (Hendricks and Schill, 2017: 121) that points out that „it is not an exaggeration to say that today's political campaigns are social media campaigns.“ In their campaigns they mostly used Facebook, Twitter and Instagram. Also, Williams (2017: 207) points out that social networks „enable new ways of creating political campaigns and channels through which candidates and voters can communicate.“ Likewise, Hendricks and Schill consider these networks (Facebook, Twitter, Instagram) the most cost-effective social media for communicating with voters. Yet, the recent US presidential election has shown that using two or three social networks is not enough. In 2020, presidential candidates Trump and Biden used more than five channels online to promote and publish content written by themselves. In an analysis of the use of social networks and other opportunities online, Bredava (2020) states that Trump used Twitter, Instagram, Facebook, TikTok, YouTube, Cameo, online games, Reddit, the Official Trump 2020 App and Twitch. While Biden used Twitter, Instagram, Facebook, TikTok, YouTube, Cameo, online games and Reddit. At the time of the election, Biden had fewer followers on social networks and posted less content, but advocated for the safety of citizens and encouraged them to vote from home. On the other hand, Trump justified the title of "Twitter President" because he criticized media outlets, scientists and did not publish that much content related to the political campaign. In the 2019-2020 Croatian presidential elections, candidates also used social networks during the campaign. In these presidential elections, candidates also used social networks during the campaign.

Most candidates used Facebook and Instagram, and only a few used Twitter. Considering the engagement on social networks and ads on Google, Mrs. Kolinda Grabar Kitarović, the former president of the Republic, had the best reach towards the audience. Although she joined the campaign for a second term later than the others, she overtook all the candidates in terms of advertising activity. In the continuation of the analysis, the comparison of the candidates Zoran Milanović and Miroslav Škoro, who started the campaign on the same day, but as explained by the communication expert and co-founder of the CTA communication agency Mr. Petar Tanta, with a different goal, is particularly interesting. As the main difference between the two campaigns, he stated that Milanović did not „hunt likes" but encouraged increased communication, while Škoro focused on gathering fans in his campaign. However, social networks in politics are not useful only during elections. Social networks are used daily by political parties, state institutions and diplomatic representatives to inform the public efficiently and easy. Thus, the public is informed through social networks, for example, about the pandemic of the coronavirus disease, the conclusion of new diplomatic ties, the achievement of new effective solutions for the benefit of the citizens etc.

4. RESEARCH PLAN, METHODOLOGY AND HYPOTHESES

According to the list of the Ministry of Foreign and European Affairs, the Republic of Croatia has 196 diplomatic missions and consular offices in the world, of which several dozen are active on social networks, mostly Facebook and Twitter. These two social networks are considered channels through which the Croatian public is most informative. The research analyzed several profiles and official pages on mentioned social networks, with special attention to those who have profiles on both networks. Profiles on social networks cover the year 2020, with special focus content related to natural disasters and the coronavirus pandemic. Content analysis was used as a primary research method to give the most accurate results on activity, type of content, the number of posts in the year 2020, audience reach and language of the published content. The researched sample of existing social networks is relatively small, so the obtained data is presented quantitatively. Alongside with content analysis, in the research were used method of description, method of comparison and statistical methods. The method of description describes the relevant paradigms, the method of comparison of the investigated similarities and common features, and the statistical methods show the obtained research results numerically and graphically. The social networks Facebook and Twitter were chosen as the subject of research, and as the research time year 2020. Research also includes monitoring the most current topics on social networks of Croatian diplomatic and consular missions in Croatia - the pandemic of coronavirus and earthquakes in March and December that hit central parts of Croatia.

The starting hypothesis of the research is:

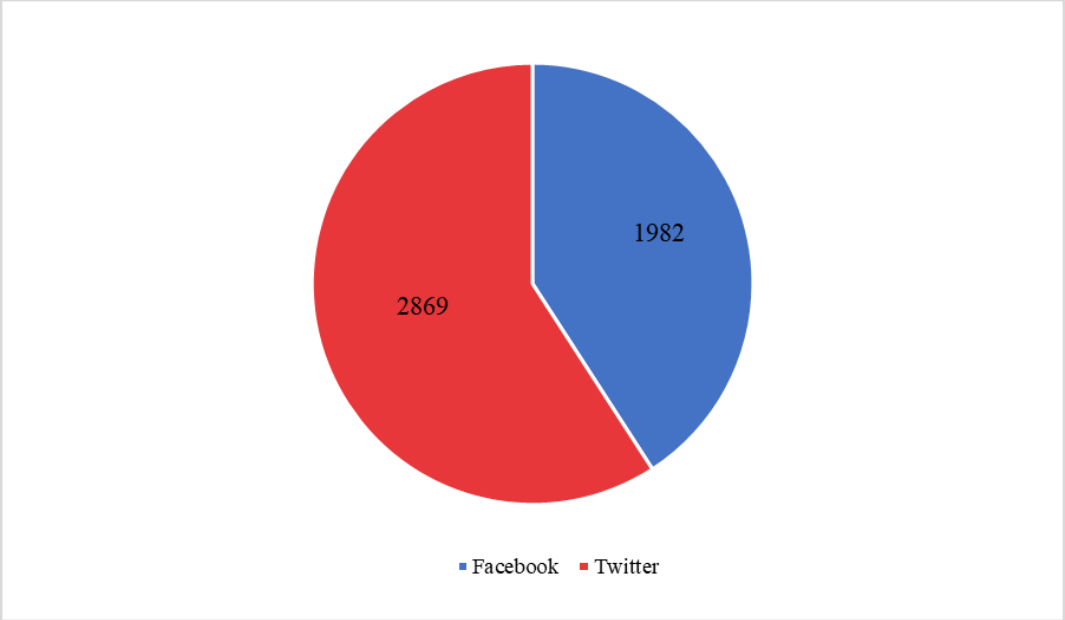
- H1: The profiles of Croatian diplomatic missions on social networks are active and there is more published content (which refers exclusively to the activities of the embassy) on Facebook than on Twitter.
- H2: The population of the Republic of Croatia uses Facebook more for communication and information than other networks.

5. RESULTS OF PROFILE RESEARCH AND PUBLICATIONS ON SOCIAL NETWORKS OF CROATIAN DIPLOMATIC MISSIONS

The results of the research are presented graphically and tabularly. They include a view depending on the social networks on which they are located, with embassies that have a profile on Twitter and Facebook being further compared. Also, the analysis is complemented by content shared by all or most profiles, and research has shown several such posts.

The material was searched through social network search engines using keywords. The following keywords1 were used: *Embassy of the Republic of Croatia, Croatia in, Croatian Embassy in, Embassy of Croatia in.* All pages and profiles that the search engine recognized by the listed keywords were used in the analysis. Two profiles in the paper do not contain keywords but were still offered by the search engine and are included in the analysis. Research results showed 11 profiles of Croatian diplomatic missions on Twitter, while 20 pages exist on Facebook. Results were a bit surprising, as none of the results showed social networks of the embassies in Germany, France or Serbia. These diplomatic missions may have accounts on social networks but are addressed in a different language or script. Each profile and the official page name also has a link to the source, so the authenticity is easily confirmed. The following view is related to the total number of posts published on analyzed social networks, and as the data show, there are more posts published on Twitter. The data is quantitatively shown in Figure 1. It shows the number of posts on Twitter is higher than those on Facebook, even though the number of Facebook pages of diplomatic missions is higher.

Figure 1: Total number of posts on social networks in the year 2020

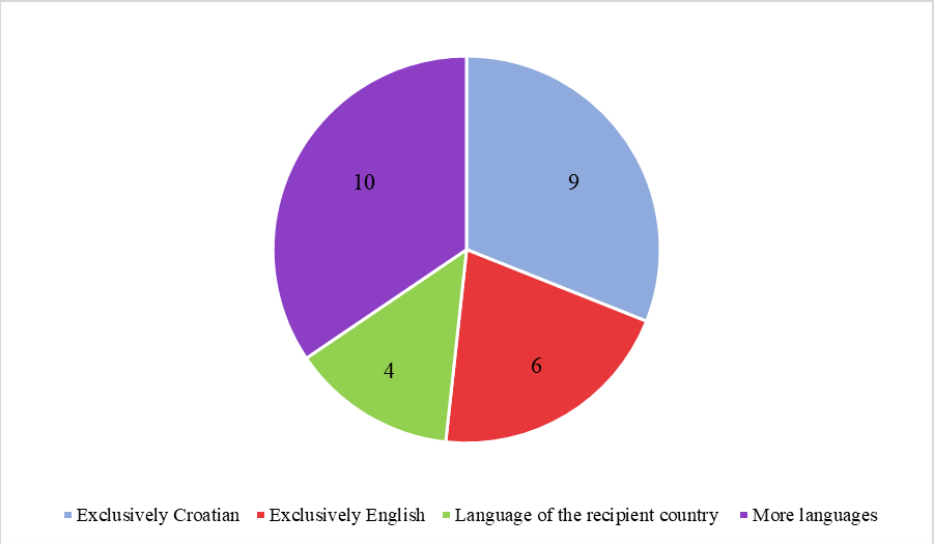


The last chart in the introductory part shows the language of communication used on social networks. Since these are diplomatic missions outside the Republic of Croatia, the research also includes language analysis. The figure below shows how many official sites and pages use Croatian in publications, how many use the language of the recipient country, and how many write in several languages. The results are shown in Figure 2. *Expression of the language of publication on social networks.* Before showing the results, it should be emphasized that the results for Facebook pages *Embassy of Croatia, Ottawa* and the *Embassy of the Republic of Croatia in Russian Federation* did not post a single publication in the analyzed year and are excluded from the display.

Figure following on the next page

[1] Key words in Croatian edition of paper: Veleposlanstvo Republike Hrvatske, Croatia in, Croatian Embassy in.

Figure 2: Expression of the language of publication on social networks



It was earlier pointed out that content shared by a large number of profiled and pages will be analysed separately. These are just a few posts, although more of the same post (mostly retweets) can be found on Twitter, which is not included in the aforementioned analysis. Furthermore, these are posts that most pages and profiles shared. The first publication is related to the song Moja Domovina (My Homeland) performed by Klapa Sv. Juraj of Croatian Navy and shared by 27 of 31 profiles. The already mentioned profiles of the Embassies of the Russian Federation and Ottawa did not share this song and with them, pages that didn't share this post are Embassies of the Republic of Croatia in Australia and New Zealand and the Embassy of the Republic of Croatia in Lisabon. The next post is related to the earthquakes in Croatia in December 2020. The post contains a photograph of data that shows the bank number of state budget account on which people can pay for humanitarian aid. As in the last example, pages that did not post anything about this subject are the embassy in Russian Federation and the embassy in Canada, but also the embassy in Malaysia that mostly published content about diplomatic action with only a few posts about news from the homeland. As announced, figures 3 and 4 show those embassies that are active on both social networks, there are three such embassies, and results show whether they are more active on Facebook or Twitter. The second chart (Figure 4) provides an overview of profile activation on social networks.

Figure 3: Comparison of profile activation on social networks

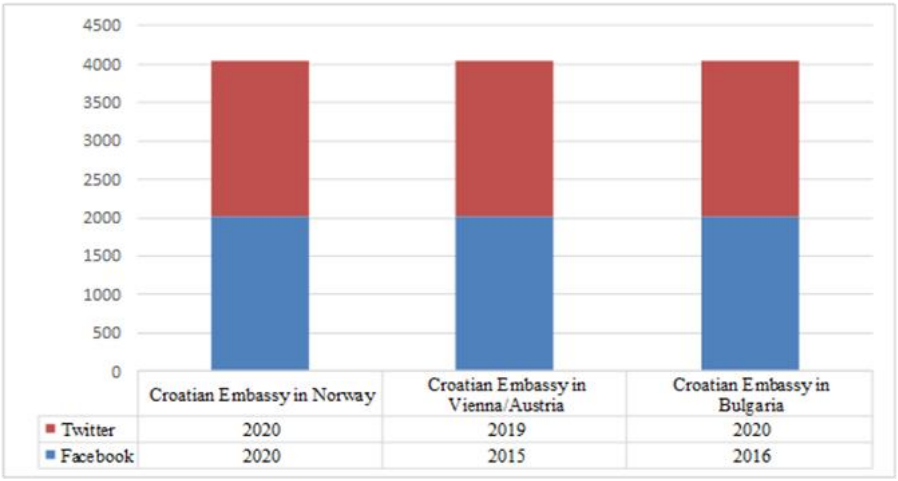
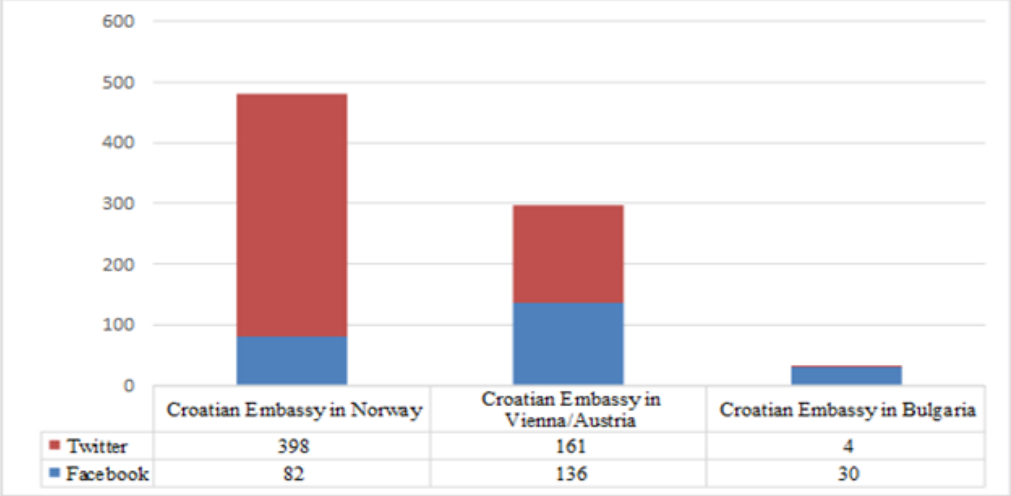


Figure 4: Comparison of number of postings of selected diplomatic missions on Facebook and Twitter



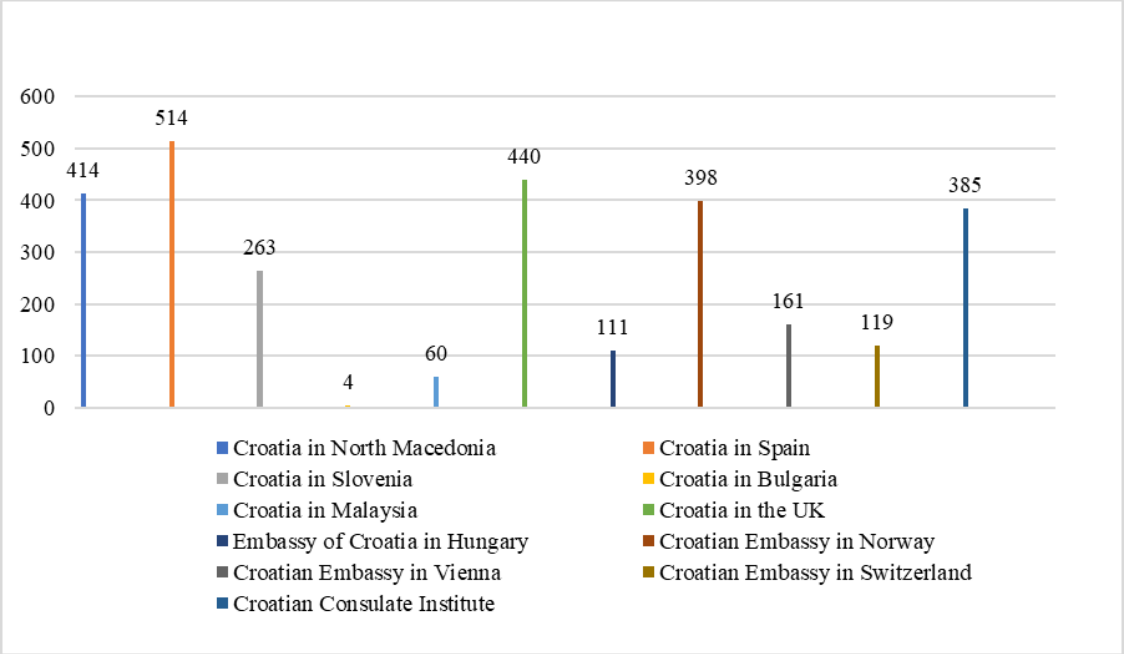
Twitter is a social network for posting short news. It is specific due to the limited number of characters per tweet (140) because it expects users to write the most important things in just a few sentences. It became popular in politics during the tenure of now-former US President Donald Trump, who used Twitter daily to express his personal opinion, discuss with dissidents and promote his political activities. The situation with Croatian diplomatic missions is different. The search results showed only 11 profiles, which refer exclusively to the countries or cities where embassies or consular offices are located. We should mention that official profiles of the United Nations, NATO and similar organizations are not a part of the research. To begin with, the following is a tabular presentation of the profile launch years. It is surprising that most profiles were created at the end of 2019 and through 2020, with only a few profiles that were created a few years before. However, some of the profiles created during 2020 surpassed those "older" profiles in terms of the number of posts, but not in terms of user follow-up, which is not surprising since the recently launched profiles could not gather many followers.

Table 1: The year of launching the profile of Croatian diplomatic missions on Twitter

2014	2017	2019	2020
Croatia in the UK (February)	*Croatia in Malaysia (March)*	*Croatia in North Macedonia (November)*	*Croatia in Spain (January)*
		Embassy of Croatia in Hungary (November)	*Croatia in Slovenia (January)*
		Croatian Consulate Institute (December)	*Croatian Embassy in Switzerland (January)*
		Croatian Embassy of Vienna (December)	*Croatia in Bulgaria (January)*
			Croatian Embassy in Norway (February)

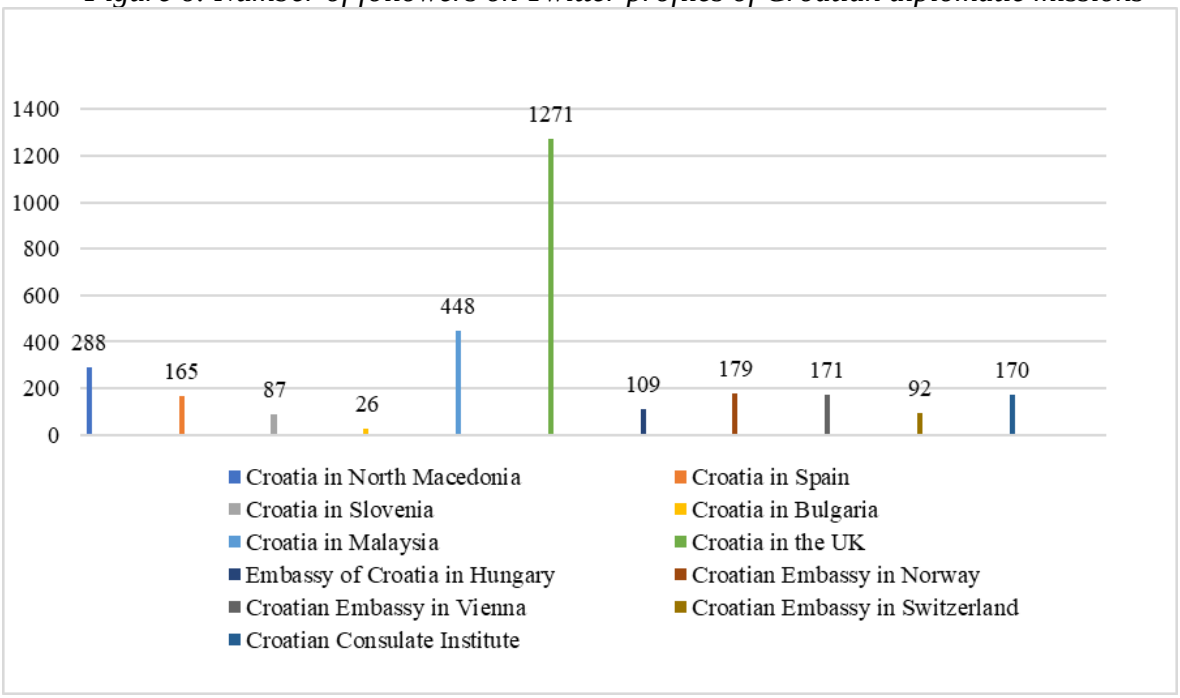
What connects most Twitter profiles is a lot of retweeting, which means sharing the post from another Twitter profile. Everything else (sharing websites or posts from other social networks) is included as the posts of profiles, ie tweets. The most shared posts were from the following Twitter profiles: Andrej Plenković, MVEP / EFEA, Gordan Grlić Radman, Ursula von der Leyen, the Government of the Republic of Croatia, MUP-RH, Croatia in the EU, and Andreja Metelko-Zgombić. Also, some profiles share websites that promote culture and tourism, such as Croatia Full of Life and Visit Croatia. Also, as noted at the outset, special attention was paid to content about coronavirus disease and earthquakes, especially those that occurred in December. Published content about coronavirus and earthquakes (that is not connected to diplomatic activity) is mostly shared from official sites and political officials. One of the profiles that hadn't published anything about both topics is Croatia in Bulgaria. This profile in 2020 published only four posts, and not one about coronavirus or earthquakes in March and December. They congratulated Europe Day and Independence Day and posted a review of the online meeting of the two ensembles. The following figure shows a graphical display of activities on profiles on Twitter. Tweets and retweets are included, as Twitter counts them all under tweets.

Figure 5: The activity of the profile of diplomatic missions on Twitter by the number of posts in the year 2020



Furthermore, the number of followers on Twitter profiles are included in the analysis. Communication with the audience is not often, but several posts related to diplomatic activity got some feedback from the audience. As mentioned earlier, on Twitter profiles there are many retweets from state officials and state institutions. They shared content about the presidency of the Republic of Croatia in the EU, tweets published by the Prime Minister Plenković, Minister of Foreign Affairs Grlić Radman and other official profiles. As a significant number of profiles was launched in early 2020, it was clear they would not have that many followers. Of the 11 active profiles, only two have been active for more than two years - Twitter profiles of the United Kingdom and Asia. These two have the most published content but still did not have as much published content as the Embassy in Spain, which launched in January of 2020, and has 514 publications that are mostly written in Spanish.

Figure 6: Number of followers on Twitter profiles of Croatian diplomatic missions



An analysis of the content of the Twitter profiles yielded interesting results. Although there were only 11 profiles, which was not in line with initial expectations, there was more than enough data to conduct the analysis. Earlier in the paper, it was emphasized the most of the content on Twitter is presented through the division of posts, i.e. retweets which show a lack of original content related to the work of the embassy/consular office. Although no precise quantitative data are presented, the concordance between the divided publications is remarkably similar, while some published content is identical. What some diplomatic mission and consualr offices have adapted is writing in English, which is the unofficial language of Twitter. Writing in English is more practical because it is known as the world's first language, but it is also good to publish in the mother tongue and in the language of the recipient county. Ultimately, the display of content on Twitter is accurate, concise and clear, which is certainly an advantage in conducting research. The social network that is still high on the scale of popularity and usage in the Republic of Croatia is Facebook. It is used for content sharing, informing, communicating, discussions. It is present in every segment of our lives and proved especially useful during the earthquake in December. Within a few hours, groups were set up and volunteers were organized to go to the affected areas and provide feedback to fellow citizens on what was missing. As mentioned before, Facebook was used in US and Croatian presidential elections but is also used daily by diplomatic missions and consular offices. Research shows 20 results that match keywords. The results are presented in the table below and show that pages of Facebook are launched before some profiles on Twitter.

Table following on the next page

Table 2: The year of launching the official Facebook page of Croatian diplomatic missions

2010	*Embassy of Croatia, Ottawa (July)*				
2012	*Veleposlanstvo Republike Hrvatske u Čileu (February)*	*Croatian Embassy in London (October)*			
2013	*Veleposlanstvo Republike Hrvatske u Ruskoj Federaciji (August)*	*Croatian Embassy in Washington D.C. (November)*			
2015	*Croatian Embassy in Austria (April)*				
2016	*Veleposlanstvo Republike Hrvatske u Brazilu (April)*	*Veleposlanstvo Republike Hrvatske u Prištini (August)*	*Croatian Embassy in Bulgaria (December)*		
2017	*Veleposlanstvo Republike Hrvatske u Pragu (May)*				
2019	*Croatian Embassy, Stockholm (January)*	*Croatian Embassy in Copenhagen (February)*	*Veleposlanstvo Republike Hrvatske u Kanadi (November)*	*Veleposlanstvo Republike Hrvatske u Lisabonu (December)*	
2020	*Embassy of the Republic of Croatia in Bosnia and Herzegovina (January)*	*Croatian Embassy in Norway (February)*	*Veleposlanstvo Republike Hrvatske u Buenos Airesu (March)*	*Generalni konzulat Republike Hrvatske u Pečuhu (May)*	*Embassy of the Republic of Croatia in Australia and New Zealand (November)*

Unlike profiles on Twitter, the official Facebook pages contain significantly more posts related to diplomatic activity. Out of 20 pages, almost all (except the embassy in the Russian Federation and the embassy in Ottawa that did not post anything in 2020) published content about diplomatic activity. With content about diplomatic activity, profiles contain shared posts from state institutions, political officials and other members of the political world, but in lesser numbers in comparison to Twitter. It is also important to mention that 17 out of 20 pages actively informed their audience about the situation in their homeland regarding coronavirus and devestating earthquakes in March and December of 2020.

However, as it is shown in Figure 6, Facebook has less published content than Twitter in the analyzed year, although there are more Facebook pages active. A more detailed presentation of the total number of published content follows in Table 3. To highlight the best/the worst results, as tools were used yellow (the best) and blue (the worst) colours. It should be emphasized that Facebook page of the Croatian Embassy in Bosnia and Herzegovina has the most posts, but mostly published in the form of retweets. With that being said, the content related to the diplomatic activity is smaller than that of shared publications.

Table 3: Activity of the profile of diplomatic missions on Facebook in terms of the number of posts in the year 2020

Official page name	Activity
Croatian Embassy in Copenhagen	43
Croatian Embassy in London	87
Croatian Embassy in Austria	136
Croatian Embassy, Stockholm	54
Croatian Embassy in Romania	112
Croatian Embassy in Washington D.C.	46
Croatian Embassy in Norway	82
Croatian Embassy in Bulgaria	30
Embassy of Croatia, Ottawa	-
Embassy of the Republic of Croatia in Australia and New Zealand	71
Embassy of the Republic of Croatia in Bosnia and Herzegovina	643
Embassy of the Republic of Croatia in Canada	145
Embassy of the Republic of Croatia in Pristina	100
Embassy of the Republic of Croatia in Prague	167
Embassy of the Republic of Croatia in Brazil	34
Embassy of the Republic of Croatia in Buenos Aires	112
Embassy of the Republic of Croatia in Lisbon	31
Embassy of the Republic of Croatia in the Russian Federation	-
Embassy of the Republic of Croatia in Chile	1
Consulate General of the Republic of Croatia in Pécs	88

More content about diplomatic activity on social networks is always a better idea because the audience is following a certain page or profile because of this content. By frequent content about diplomatic activity, an audience feels like they follow the work of diplomatic representatives, which is a purpose of having active social networks in digital diplomacy. Therefore, it is not surprising that the audience is more involved in following the content on Facebook. Most posts on Facebook, unlike ones on Twitter, have at least a few audience reactions. The content is still thematically informative, but there is a balance between posting about diplomatic activity and other themes. Also, many pages published content in Croatian as a primary language, but some wrote in more than two languages, which is good because multilingualism contributes to a larger audience. The following tabular presentation contains information about the number of "likes" and follows on analyzed pages. It is necessary to show both data because a person that liked a certain page, doesn't necessarily follow it. As in the previous example, the colours yellow and blue are used to highlight the most and least liked and followed Facebook page.

Table 4: Number of followers on the official Facebook pages of Croatian diplomatic missions

Official page name	Like	Follow
Croatian Embassy in Copenhagen	507	545
Croatian Embassy in London	4326	4539
Croatian Embassy in Austria	2438	2553
Croatian Embassy, Stockholm	1519	1570
Croatian Embassy in Romania	1338	1358
Croatian Embassy in Washington D.C.	3245	3427
Croatian Embassy in Norway	299	312
Croatian Embassy in Bulgaria	282	306
Embassy of Croatia, Ottawa	-	-
Embassy of the Republic of Croatia in Australia and New Zealand	511	575
Embassy of the Republic of Croatia in Bosnia and Herzegovina	367	386
Embassy of the Republic of Croatia in Canada	403	420
Embassy of the Republic of Croatia in Pristina	2868	2901
Embassy of the Republic of Croatia in Prague	1424	1527
Embassy of the Republic of Croatia in Brazil	2161	2286
Embassy of the Republic of Croatia in Buenos Aires	1163	1373
Embassy of the Republic of Croatia in Lisbon	64	67
Embassy of the Republic of Croatia in the Russian Federation	-	-
Embassy of the Republic of Croatia in Chile	196	196
Consulate General of the Republic of Croatia in Pécs	460	469

Results of the research on Facebook showed better communication with the public, more content related to diplomatic activity, but a smaller number of posts that are still reviewed and accurate. The content on Facebook shows better understanding of what should be published on social networks in the time of digital diplomacy.

6. CONCLUSION

Social networks are an indispensable part of communication in today's world. They are curcial for social connections, but also political action. They are used as a tool to communicate and promote the campaign during elections, but also in the work of embassies and diplomatic representatives. Although the Republic of Croatia has developed diplomatic relations with many countries, there are not many social networks through which the public is informed about their activities. Therefore, the research was conducted through content analysis on two social networks – Facebook and Twitter. These social networks were set aside for analysis because they still use the text part where users can inform followers about the events, while for example Instagram, which is dominated by photos and videos, was not the subject of research. The results of the research showed the existence of 31 profiles and official pages of diplomatic and consular missions of the Republic of Croatia abroad. Time of analysis was 2020, which was specific to the whole world. The content, activity, but also the number of followers were analyzed, as well as the communication and reaction of the audience, which according to the obtained results proved to be less than expected. Furthermore, what connects almost all profiles and official pages are two posts - help after earthquakes and a link to the song Moja Domovina (My Homeland) on the occasion of Statehood Day. Although the research showed fewer Twitter profiles with more published content than more official Facebook pages and fewer posts overall, Facebook contained more content about the diplomatic activity, thus confirming the initial

hypothesis. The analysis also shows it was a good decision that diplomatic missions began to use the possibilities of the so-called digital diplomacy because in this way they are in step with the times, and by using modern technology they create the possibility for a direct, simple, fast and efficient way of communication with the public.

LITERATURE:

1. Biberović, M. (2019) *Velika analiza kampanje kandidata za predsjednika 2019: Tko najbolje plovi digitalnim vodama?* Netokracija. https://www.netokracija.com/izbori-predsjednik-2019-drustvene-mreze-163222.
2. Berković, S. (2006) *Diplomacija i diplomatska profesija*. Dubrovnik: Urban i Media d.o.o.
3. Bjola, C. (2019) *The "dark side" of digital diplomacy*. USC Center on Public Diplomacy. https://uscpublicdiplomacy.org/blog/dark-side-digital-diplomacy.
4. Bredava, A. 2020. *Biden's and Trump's election campaigns: a social media analysis*. Awario.
5. Hendricks, J. A. and D. Schill (2017) „The Social Media Election of 2016“, 121-150. In: Denton Jr. R. (ur.) *The 2016 US Presidential Campaign. Political Campaigning and Communication*. Cham: Palgrave Macmillan.
6. Marks, S. (2020) *Diplomacy*. Britannica, https://www.britannica.com/contributor/Sally-Marks/3736
7. Ministarstvo vanjskih i europskih poslova. *Diplomatske misije i konzularni uredi u svijetu*, http://www.mvep.hr/hr/predstavnistva
8. Rashica, V. (2018) The Benefits and Risks of Digital Diplomacy. *SEEEU Review*, 13 (1) 75-89.
9. Ritto, L. (2014) *Diplomacy and its practice Vs Digital Diplomacy*. Diplomat Magazine. http://www.diplomatmagazine.nl/2014/10/18/diplomacy-practice-vs-digital-diplomacy-2/
10. Urlić, A. (2014) *Kako društvene mreže mijenjaju tradicionalnu diplomaciju*. PLANB, http://planb.hr/kako-drustvene-mreze-mijenjaju-tradicionalnu-diplomaciju/
11. Williams, C.B. (2017) „Introduction: Social Media, Political Marketing and the 2016 U.S. Election“, *Journal of Political Marketing*, 16 (3-4), 207-211.

METHODOLOGICAL APPROACH VALUATING THE IMPACTS ASSOCIATED WITH OCCURRENCES ON RAILWAYS

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ABSTRACT

The paper focuses on the evaluation of the socio-economic impacts of the implementation of the investment projects aimed at increasing the railway line safety and reliability. The article builds upon the research activity carried out within the applied research project "Evaluation of increased safety and reliability of railway infrastructure after its modernization or reconstruction". The benefits connected with this increase have already existed, however they have not been evaluated and used in the economic evaluation. The research aims to achieve the balance between real benefits and benefits involved in the economic evaluation to ensure the correct results for the decision-making process. The aim of the paper is to design and verify a methodological approach for evaluating of the benefits associated with reducing of the number of occurrences on the railway. The paper summarizes key information on the socio-economic evaluation of public investment projects in transport infrastructure with a special focus on the railway infrastructure, paying particular attention to the occurrence emergence on the railway and their impacts. The paper outputs bring the verification of the accuracy in determining of the expected impact of relevant occurrence emerging in the corresponding railway sections using both detailed and simplified approaches, which are proposed within the paper. The verification was performed on six railway revitalization projects implemented in the 2015-2016 period. Recommendations for the use of the elaborated detailed and simplified approaches are presented in the last part of the paper together with the formulation of further expected steps within the addressed research project.

Keywords: *Investments, Efficiency, Railways, Occurrences, Socio-Economic Impacts*

1. INTRODUCTION

The paper presents partial practical outputs of an applied research project aimed at evaluating the benefits associated with increasing railway line safety and reliability due to the implementation of projects involving increasing the security device efficiency. The evaluation was performed in order to make use of the identified benefits within the Cost-Benefit Analysis (CBA) of railway investment projects. The article builds on the partial outputs of the project published in articles [1-4]. In successive steps, the authors of the research project present the identification and classification of occurrence emerging on the railway and the economic evaluation of their impacts. Using the Database of Occurrences [5], which includes more than 5,000 occurrences emerging in the Czech Republic in the 2011-2018 period corresponding to the research needs, an economic evaluation of the identified subcategories of occurrences was performed and unit impacts were determined for the average occurrence of a given category. Using detailed data on the Czech railway transport network [6-9], the following steps were used to determine the average values of economic impacts of sub-categories of occurrences per one railway station (for occurrences emerging at railway stations) or per one kilometre of wide track (for occurrences emerging on railway line sections). The authors were verifying a functionality of the defined approaches (both detailed and simplified) and subsequently, the evaluation results of the average impacts of occurrences performed by detailed and simplified approaches were compared. The research question that the presented paper addresses is to determine, how accurate is the simplified approach usage compared to detailed approach usage, which is more data demanding and requires access to the Database of Occurrences [5] to identify relevant occurrences emerging prior to the implementation of the project leading to an increase in the railway safety and reliability.

2. PRESENT STATE REFERENCES

In general, the economic analysis of public investment projects was described in a number of documents. The key document for performing an economic analysis of public investment projects in the European Union is the Guide to CBA [10], which presents the general principles of Cost-Benefit Analysis and case studies from sub-fields of public investment projects, including transport infrastructure. The economic analysis of transport infrastructure projects at the national level in the Czech Republic is dealt with by the Departmental Guideline of the Ministry of Transport [11]. The use of CBA in "railway upgrade projects" was presented in the article [12], different approaches to the use of CBA in railway infrastructure projects in different countries are evident from the resource [13]. Siciliano et al. [14] present an adaptation of the CBA principles to the evaluation of railway services. The projection of the project external costs into the economic evaluation using the CBA was presented on the tourist railway line in Italy in the document [15]. Evans [16] focuses on railway safety and its subsequent reflection in the economic evaluation of a railway infrastructure project. The results published in the document [17], which addresses the evaluation of the impacts of the railway project regarding noise, should be mentioned to present the possibilities of using CBA in railway infrastructure. Tseng et al. [18] assess the impacts of timetable changes and expected train departures. Johnsen et al. [19] and Petrova [20] address the general issue of risks on the railway line and their evaluation. Evans [21] provides a comprehensive overview of serious occurrences emerging in Europe, including their detailed analysis, and Santos-Reyes [22] presents a systematic analysis of railway accidents. Klockner and Toft dealt with the issue of occurrences from a systematic point of view in their work [23]. Edkins and Pollock [24] addressed the impact of sustainable railway line surveillance and the frequency of occurrences emerging on the railway. Read et al. in their article [25] address partial factors and errors that lead to occurrence emergence on the railway, Kim et al. [26] deal with the impact of preventive measures on the frequency of occurrences in their factor analysis.

Accidents on the railway and their distribution on the railway transport network in Ukraine were addressed in detail in the paper [27], aspects of railway accidents from the perspective of engine drivers were addressed in the material [28].

3. MATERIALS AND METHODS

The methodological approaches for the evaluation of impacts of partial sub-categories of occurrences arising within the specific track, which formulation and verification are the subjects of the presented paper, is based on ongoing results of applied research aimed at evaluating the benefits associated with increasing the railway infrastructure safety and reliability due to the security systems implementation. The input information for formulating the methodological procedure has the following structure:

- Identification and description of relevant occurrences.
- Determination of the socio-economic impacts of subcategories of occurrences.
- Reflexion of socio-economic impacts within the evaluated system, their relation to railway stations and tracks.

The methodological procedure takes into account the categories of occurrences, the impacts (or impact evaluation) which have not yet been methodically addressed, and which can be prevented by the implementation of appropriate measures. In principle, therefore, this methodological procedure did not deal with occurrences emerging at level crossings (it was dealt with by a separate methodological procedure of the Ministry of Transport) and the occurrences emerging due to suicides. More detailed information on the identification of subcategories of occurrences can be found in the article [1].

Determination of the socio-economic impacts of subcategories of occurrences involves following partialsocio-economic impacts:

- Impacts on health
  - Death,
  - Serious injury,
  - Minor injury,
- Material damage,
- Impacts due to delay of passenger trains,
- Impacts due to delay of freight trains.

More detailed information on the identification of socio-economic impacts of sub-categories of occurrences can be found in the article [2]. The expected socio-economic impacts of individual categories of occurrences must be perceived in relation to the system in which they arise. In general, it can be stated that occurrences emerge either on the railway lines or at the railway stations. Both railway lines and railway stations were further divided into nationwide and regional. Following the statistical data taken from the database of occurrences and their detailed analysis it was stated that 94.85% of occurrences arise in railway stations and 5.15% on wide tracks. The extent of the railway network is characterized by the total number of railway stations on nationwide and regional lines and the total number of kilometres of railway lines, also on nationwide and regional lines. An overview of the data on the extent of the railway network is given in the article [3]. The expected annual socio-economic impacts for each relevant occurrence category per one kilometre of wide track and one railway station, both further divided into nationwide and regional lines, are presented also in the paper [3], total annual impacts of all occurrences is presented in the table 1.

Part of the railway network	Value
Railway station – nationwide line	2,922.72 €/station/year
Railway station – regional line	431.35 €/station/year
Wide line – nationwide line	41.67 €/km/year
Wide line – regional line	7.39 €/km/year

Table 1: Values of total socio-economic impacts of occurrences (CA 2018) (Source: [3])

More detailed information on the determination of socio-economic impacts within the evaluated system can be found in the material [3].

4. RESULTS

The following approaches were developed by the author team to evaluate the socio-economic impacts of projects aimed at increasing railway safety and reliability in the form of eliminating the occurrence emergence for the relevant railway line or railway station:

- Detailed (detailed analysis of the real expected impacts of the project and their subsequent evaluation).
- Simplified (use of average values determined on the basis of the Database of Occurrences for the 2011-2018 period).

The detailed approach is based on detailed knowledge of the railway section or railway station, where the analysed project was implemented. The necessary knowledge is mainly represented by information on the frequency of partial emergencies in the years prior to the beginning of the project and detailed information on measures increasing the relevant railway infrastructure safety and reliability and their expected impact on the number of occurrences. These information it is possible to take from the Database of occurrences [5]. The total annual savings are determined as the sum of annual savings for the relevant categories of occurrences and can be subsequently used as a positive economic flow in the economic analysis within the CBA processing of the project for all relevant years of the evaluated period. A simplified approach can be used if detailed information on the number and structure of occurrences emerging in the corresponding areas (line section or railway station where the project is planned for implementation) in the period prior to the project implementation is not available within the corresponding project. The average values described in the previous part can be used for this purpose. A simplified approach is based on the utilization of the overall socio-economic impacts of occurrences. For the detemination of the average socio-economic impacts related with occurrence arising within the part of the railway related with the evaluated project, it is possible to use values from the Table 1, which shows the average annual socio-economic impacts of occurrences for all categories in total. These impacts are also related to one railway station (if the project deals with measures at a railway station) or to one km of a wide track (if the project deals with measures on a wide track).The annual savings can be used as a positive economic flow in the economic analysis within the CBA processing of the addressed project for all relevant years of the evaluated period. Verification of the applicability of the methodological procedures presented in the previous part of the paper shall be the subject of subsequent research. In this paper, the authors focused on the accuracy of estimating the average annual impact of occurrences emerging on the line sections and at a railway station, where projects increasing railway safety and reliability were implemented. The aim of the case study was to assess the feasibility of determining the average impact of occurrences on the railway line section and to discuss the accuracy of its calculation and the usability of a simplified approach for analysis. The basis of the case study was the use of a detailed approach.

This approach can be considered to be highly accurate, as it works with real occurrences that emerged in the relevant line section prior to the project implementation in the corresponding period. The results of the detailed approach were subsequently compared with the results of the detailed approach, which worked with average values for all categories of occurrences. The case study was carried out using six railway line revitalization projects, which were implemented in 2015. The sample of projects included four projects on nationwide lines (nationwide - NW) and two projects on regional lines (regional - REG). An overview of the projects is given in Table 2.

No.	Project description	Start	Finish	Line type	Track TTP-No (Track Ratio Tables)	From (km)	To (km)
1	Track No. 280 Hranice na Moravě – Střelná, part of the line Teplice nad Bečvou – Hustopeče nad Bečvou	28/05/2015	30/06/2016	NW	308	6.2	15.4
2	Revitalization of track No. 323 Frýdlant nad Ostravicí – Valašské Meziříčí	01/06/2015	30/06/2016	REG	302A	61.1	101.1
3	Track No. 230 Kolín – Havlíčkův Brod, part of the line Golčův Jeníkov – Vlkaneč	01/09/2015	02/01/2016	NW	324	257.6	266.7
4	Track No. 340 Brno – Uherské Hradiště, part of the line Brno-Černovice – Brno-Slatina	10/09/2015	11/12/2015	NW	318A	2.2	6.1
5	Track No. 280 HranicenaMoravě – Střelná, part of the line ValašskéMeziříčí – Jablůnka and Vsetín – Horní Lideč	20/04/2015	13/08/2015	NW	308	38.0	19.1
6	Revitalization of track No. 281 Valašské Meziříčí – Rožnov pod Radhoštěm	01/07/2015	31/08/2015	REG	304G	5.2	13.2

Table 2: Overview of projects used in a case study
(Source: Own elaboration according to project studies)

Table 3 presents a comparison of the calculations of the average annual impacts of occurrences determined using both detailed and simplified approaches. The average values determined using the detailed approach are given in the line "Total – detailed approach", which summarises the first part of the table devoted to the detailed approach, the average values determined using the simplified approach are given in the line "Total – simplified approach", which summarises the second part of the table.

Table following on the next page

Detailed approach	**Project 1 NW**	**Project 2 REG**	**Project 3 NW**	**Project 4 NW**	**Project 5 NW**	**Project 6 REG**
Occurrence category	**The average annual impact of real occurrences (EUR per year)**					
A1	0	0	0	0	0	0
A2	0	0	0	0	0	0
A3	0	0	0	0	0	0
B1	0	0	0	0	0	0
B2	0	0	0	0	0	0
B3	0	0	0	0	0	0
C1	0	0	0	0	0	0
C2	0	759	759	0	2,278	0
C3	0	3,362	1,681	0	0	840
C6	493	0	0	986	2,464	0
C12	0	0	0	0	0	0
C19	884	0	884	884	4,422	0
Total – detailed approach	**1,377**	**4,121**	**3,325**	**1,870**	**9,164**	**840**
Simplified approach	**Project 1 NW**	**Project 2 REG**	**Project 3 NW**	**Project 4 NW**	**Project 5 NW**	**Project 6 REG**
Number of km of the line	9.20	39.92	9.08	3.88	18.88	8.01
Number of stations on the line	1	9	1	1	3	2
ORD_t	41.67	7.39	41.67	41.67	41.67	7.39
ORD_s	2,923	431	2,923	2,923	2,923	431
Total – simplified approach	**3,306**	**4,177**	**3,301**	**3,084**	**9,555**	**922**

Table 3: Determining the average impact of occurrences for projects 1 – 6 (Source: own elaboration)

5. DISCUSSION

At the beginning of the discussion, it is necessary to recall that the basic source for the whole analysis performed in the presented research was the Database of Occurrences [5], from which more than 5,000 occurrences emerging in the 2011-2018 period were determined according to the previously defined rules to be relevant to the presented research. In the subsequent process, the impacts of partial occurrences (according to categories as well as the total impacts of occurrences) were related to one km of wide line and one railway station respecting whether it was a nationwide or regional line. The average impacts of occurrences can therefore be considered sufficiently representative, as it was demonstrated in previous parts of the research. The research question that the presented paper sought to answer was how accurate the use of a simplified approach is compared to a detailed approach, which is more data demanding and requires access to the Database of Occurrences [5] for determining the average annual impacts of relevant occurrences emerging prior the beginning of the project leading to increase railway safety and reliability. As can be seen from Table 3, in the case of projects 2, 3, 5 and 6, the results of the comparison are quite positive and the values determined by the detailed and simplified approaches do not differ a lot. However, in the case of projects 1 and 4, the results are not so convincing. When analysing the reasons for inaccuracies, we should be aware of the fact that the input values for simplified approach (average impact of occurrences per one km of wide line or one railway station) were based on the data from the Database of Occurrences and represented potentially all occurrence categories, however, respecting their determined emergence frequency. Therefore, it seems correct to expect that, especially in the case of shorter reconstructed line sections, a situation may arise in the real life that no specific occurrence has

yet occurred on a given line section, even if it should have occurred statistically. This fact can be considered as a key reason for the detected differences, which should not, however, be a reason not to use the simplified approach. However, the analysts should take this fact into account and use the simplified approach rather in the case of assessing longer railway line sections (approximately longer than 10 km), where the probability of consistency of the detailed and simplified approaches can be assumed to be higher.

6. CONSCLUSIONS

The aim of the paper was, following the previous research outputs, to design and verify a methodological procedure for evaluating the benefits associated with the implementation of projects including measures to increase railway safety and reliability. The authors of the paper proposed both a more demanding "detailed" approach and a less demanding "simplified" approach. The detailed approach was based on a detailed knowledge of the history of occurrences within the corresponding line section and the form of the proposed measures to prevent the occurrence emergence. The simplified approach was based on the expected impacts of the subcategories of occurrences identified within the previous research. Part of the outputs of the presented article also represented the verification of the accuracy of determination of the expected occurrence impacts in the corresponding line section, the results obtained using both detailed and simplified approaches were compared. The comparison showed that a simplified approach is generally usable for estimating the expected impacts of occurrences; in four out of the six cases included in the case study, the resulting values were very close. However, the authors recommend caution when using a simplified approach in the case of evaluation of shorter line sections (shorter than 10 km), where the differences between the detailed (accurate) and simplified approaches may be more statistically significant.

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LITERATURE:

1. Hromádka, V.; Korytárová, J.; Vítková, E.; Seelmann, H.; Funk, T. (2020). Evaluation of Socio-economic Impacts of Incidents on the Railway Infrastructure, *Current Topics and Trends on Durability of Building Materials and Components*. Barcelona, Spain: 2020. p. 407-414. ISBN: 978-84-121101-8-0.
2. Hromádka, V.; Korytárová, J.; Vítková, E.; Seelmann, H.; Funk, T. (2021). Economic impact of occurrences on railways, CENTERIS - International Conference on ENTERprise Information Systems / ProjMAN - International Conference on Project MANage-ment / HCist - International Conference on Health and Social Care Information Systems and Technologies, *Procedia Com-puter Science*. Amsterdam, Netherlands: Elsevier B. V., 2021. p. 76-83. ISSN: 1877-0509.
3. Hromádka, V.; Korytárová, J.; Vítková, E.; Seelmann, H.; Funk, T. (2020) New Aspects of Socioeconomic Assessment of the Railway Infrastructure Project Life Cycle. *Applied sciences [online]*. MDPI, 2020, 10(7355), 7355 [cit. 2021-03-25]. Retrieved from:DOI: 10.3390/app10207355.
4. Funk, T.; Hromádka, V. (2020) Impact of Railway Modernization on the Frequency of Incidents. In: *International Multidisciplinary Scientific GeoConference: SGEM [online]*. Sofia: Surveying Geology & Mining Ecology Management (SGEM), 2020, s. 303-310 [cit. 2021-03-25]. ISSN 13142704,DOI: 10.5593/sgem2020V/6.2/s10.38.
5. Czech Railway Infrastructure Administration (SŽDC). (2018).*Statistika mimořádných událostí, databáze 2009 – 2018 (Database of Occurrences 2009 – 2018).*

6. Czech Railway Group. (2018). *Statistical Yearbook of the Czech Railways Group*, 2018.
7. Czech Railway Infrastructure Administration (SŽDC). (2015). *Prohlášení o dráze celostátní a regionální (Declaration on nationwide and regional railways)*, 2015.
8. Czech Railway Infrastructure Administration (SŽDC). (2021) *Jízdnířád (Timetable)*, available on (https://www.spravazeleznic.cz/ cestujici/jizdni-rad).
9. Czech Railway Infrastructure Administration (SŽDC). (2021). *Abecední seznam stanic a zastávek (Alphabetical list of stations and stops)*, available on https://www.spravazeleznic.cz/documents/50004227/50157161/ seznam-stanic.pdf.
10. Sartori, D. (2014). *Guide to Cost-benefit Analysis of Investment Projects, Economic appraisal tool for Cohesion Policy 2014-2020*. European Commission, Directorate-General for Regional and Urban policy. 2014. ISBN 978-92-79-34796-2.
11. Ministry of Transport of the Czech Republic (MoT CZ). (2017). *Departmental Guideline for the Evaluation of Economic Effectiveness of Transport Construction Projects*. 2017. Retrieved from http://www.sfdi.cz/pravidla-metodiky-a-ceniky/metodiky/.
12. Mátrai, T. (2013) Cost benefit analysis and ex-post evaluation for railway upgrade projects. *PeriodicaPolytechnica. Transportation Engineering [online]*. Budapest: Periodica Polytechnica, Budapest University of Technology and Economics, 2013, 41(1), 33-38 [cit. 2020-04-06]. DOI: 10.3311/PPtr.7102. ISSN 03037800. Available from: http://search.proquest.com/docview/1629583683/
13. Olsson, N.; Oekland, A.; Halvorsen, S.; Olsson, N. (2012). Consequences of differences in cost-benefit methodology in railway infrastructure appraisal: A comparison between selected countries. *Transport Policy [online]*. 2012, 22, 29-35 [cit. 2021-03-03]. ISSN 0967-070X. Available from: http://search.proquest.com/docview/1692388163/.
14. Siciliano, G.; Barontini, F.; Islam, D.; Zunder, T.; Mahler, S.; Grossoni, I. (2016). Adapted cost-benefit analysis methodology for innovative railway services. *European Transport Research Review [online]*. Berlin/Heidelberg: Springer Berlin Heidelberg, 2016, 8(4), 1-14 [cit. 2020-04-06]. DOI: 10.1007/s12544-016-0209-5. ISSN 1867-0717.
15. Carteni, A; Henke, I. (2017). External costs estimation in a cost-benefit analysis: The new Formia-Gaeta tourist railway line in Italy. In: *2017 IEEE International Conference on Environment and Electrical Engineering and 2017 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe) [online]*. IEEE, 2017, s. 1-6 [cit. 2021-03-03]. ISBN 9781538639160. Available from:DOI: 10.1109/EEEIC.2017.7977614.
16. Evans, A. W. (2013). The economics of railway safety.*Research in transportation economics [online]*. Elsevier, 2013, 43(1), 137-147 [cit. 2021-03-03]. ISSN 0739-8859. Available from:DOI: 10.1016/j.retrec.2012.12.003.
17. Oertli, J. (2000). Cost–Benefit Analysis in Railway Noise Control. *Journal of Sound and Vibration [online]*. Elsevier, 2000, 231(3), 505-509 [cit. 2020-04-06]. DOI: 10.1006/jsvi.1999.2539. ISSN 0022-460X.
18. Tseng, Y.; Rietveld, P.; Verhoef, E. (2012). Unreliable trains and induced rescheduling: implications for cost-benefit analysis. *Transportation [online]*. Boston: Springer US, 2012, 39(2), 387-407 [cit. 2020-04-06]. DOI: 10.1007/s11116-011-9345-x. ISSN 0049-4488.
19. Johnsen, S.; Veen, M. (213). Risk assessment and resilience of critical communication infrastructure in railways, *Cognition, Tech-nology& Work [online*]. London: Springer Science & Business Media, 2013, 15(1), 95-107 [Accessed 2019-10-29]. DOI: 10.1007/s10111-.
20. Petrova, E. (2015). Road and railway transport in Russia: safety and risks, *Advances in Environmental Sciences [online]*. Cluj-Napoca: Bioflux SRL, 2015, 7(2), 259-271 [cit. 2020-03-10]. ISSN 20667620. Available from: http://search.proquest.com/docview/2018602917/.

21. Evans, A. W. (2011). Fatal train accidents on Europe's railways: 1980–2009. *Accident Analysis and Prevention [online]*. Elsevier, 2011, 43(1), 391-401 [cit. 2020-07-09]. DOI: 10.1016/j.aap.2010.09.009. ISBN 0002852724000. ISSN 0001-4575.
22. Santos-Reyes, J.; Beard, A. N.; Smith R. A. (2005). A systemic analysis of railway accidents. *Proceedings of the Institution of Me-chanical Engineers, Part F: Journal of Rail and Rapid Transit [online]*. London, England: SAGE Publications, 2005, 219(2), 47-65 [cit. 2020-07-09]. DOI: 10.1243/095440905X8745. ISSN 0954-4097.
23. Klockner, K.; Toft, Y. (2017). Railway accidents and incidents: Complex socio-technical system accident modelling comes of age. *Safety Science [online]*. Elsevier, 2018, 110, 59-66 [cit. 2020-07-09]. DOI: 10.1016/j.ssci.2017.11.022. ISSN 0925-7535.Ministry of Transport of the Czech Republic (MoT CZ). Departmental Guideline for the Evaluation of Economic Effectiveness of Transport Construction Projects. 2017. Retrieved from http://www.sfdi.cz/pravidla-metodiky-a-ceniky/metodiky/.
24. Edkins, G. D.; Pollock, C. M. (1997). The influence of sustained attention on Railway accidents. *Accident Analysis and Prevention [online]*. Elsevier, 1997, 29(4), 533-539 [cit. 2020-07-09]. DOI: 10.1016/S0001-4575(97)00033-X. ISSN 0001-4575.
25. Read, G. J. M., Lenné M. G.; Moss S. A. (2012). Associations between task, training and social environmental factors and error types involved in rail incidents and accidents, *Accident Analysis & Prevention*, Volume 48, 2012, Pages 416-422, ISSN 00014575, DOI: 10.1016/j.aap.2012.02.014.
26. Kim, H. J.; Jeong, J. Y.; Kim, J. W.; Oh, J. K. (2016) A Factor Analysis of Urban Railway Casualty Accidents and Establishment of Preventive Response Systems. *Procedia - Social and Behavioral Sciences [online]*. Elsevier, 2016, 218, 131-140 [cit. 2020-07-10]. DOI: 10.1016/j.sbspro.2016.04.016. ISSN 1877-0428.
27. Transport Accidents Distribution at Ukrainian Railways According to Categories Depending on Severity of Consequences. (2018). *Nauka ta progrestransportu [online]*. Dnipro National University of Railway Transport named after Academician V. Laz-aryan, 2018, 75(3), 7-19. DOI: 10.15802/stp2018/124466. ISSN 2307-3489. Available from: https://doaj.org/article/fedc1e6ccf164b6b94cbc363f5d990b4.
28. Forsberg, R. (2016). Conditions affecting safety on the Swedish railway – Train drivers' experiences and perceptions, Safety Science, Volume 85, 2016, Pages 53-59, ISSN 0925-7535, https://doi.org/10.1016/j.ssci.2015.12.015.

PROFILE OF YOUNG PEOPLE FACING FINANCIAL RISK

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ABSTRACT

The year 2020 brought big challenges to the financial market, caused largely by the pandemic originated by SARS-COV 19. Who already invested came across large oscillations in their profitability, leaving many apprehensive investors and who did not invest was more reluctant to give the first steps in the financial market. On the other hand, others have seen an opportunity to invest and seek to increase their income. It can thus be understood that not all people behave in the same way in the face of the possibility of investing and vis-à-vis different investments. That is, investors have different behaviors to the uncertainty inherent to financial investments. This uncertainty is at risk and is a concept of psychology, economy, and finance, based on human behavior (especially consumers and investors). In other words, risk aversion is a person's reluctance to accept a business with an uncertain return, rather than another deal with a more guaranteed return, but possibly lower. According to the Securities Market Commission there is no harmonization of investor profiles between financial institutions acting as financial intermediaries. However, the most common designations for the various types of investors are conservative or prudent, balanced, or moderate, dynamic, and bold. In this study, the characteristics that best characterize young investors and their aversion to financial risk are identified. This study was conducted through a questionnaire applied to the students of Lusófona University – Lisbon, Portugal, seeking to identify what types of investments are presented as more alliciant for young people and what their behavior towards the uncertainty of profitability and guarantee invested capital.

Keywords: *Financial markets, Investor profile, Risk and Uncertainty*

1. INTRODUCTION

In economy, the financial market can be defined as the environment where assets are traded – bonds, currencies, derivatives, commodities, among other goods and assets with financial value. Each country has its own financial environment that, generally, is not restricted to trading only in values originating from its domestic market, and the role of the financial market is to enable sellers and buyers to meet. In free market economies, this interaction is critical. Therefore, in

this environment, the exchange of goods occurs freely, without major external interventions (such as the State, for example). We usually divide the parties involved in the financial market in two: the lenders (or investors) who provide the capital, and the borrowers who raise the funds in exchange for interest or part of the profits of the deal with the new shareholders. Among these negotiations, we can also observe several institutions responsible for enabling a business environment for these exchanges to take place. In addition, this body has the function of regulating and supervising the correct progress of the entire process, in the case of Portugal we have the Securities Market Commission (Comissão de Mercados de Valores Mobiliários – CMVM) established in May 1991 (decree Decree-Law no. 142-A/91, of 10 April) and its mission is to supervise and regulate the markets for financial instruments, as well as the agents that operate in them, promoting investor protection. Investors are not all the same, making different choices against different financial assets. These different choices are the result of different sensitivities to financial risk. This risk reflects the investment's uncertainty as to the possible return on capital and/or profitability. This study seeks to understand the profile of young investors in relation to different financial assets. To this end, a questionnaire was carried out with a sample of students from the largest Portuguese private university – Lusófona University. First, the theoretical context is presented, with the definition of risk, risk aversion and different investor profiles. Then, there is an analysis of the questionnaires carried out and the main conclusions, suggestions and limitations of the study carried out.

2. LITERATURE REVIEW

Financial decisions are generally made in an environment of some uncertainty regarding the expected results (Hibbert, Lawrence, & Prakash, 2013). When talking about financial investments, we are thinking about the future and this uncertainty is expressed through the risk associated with investments. That is, the risk is greater the greater the level of uncertainty associated with the investment (Dinç Aydemir & Aren, 2017). As highlighted by the *Comissão de Mercados de Valores Mobiliários* (CMVM), before investing, a wide range of aspects must be considered, such as:

- Decide how much to invest, for how long and what capital you are willing to risk losing
- Check whether there is a guarantee of the invested capital
- Not investing money, you might need for essential expenses
- If the money you intend to invest is destined for an emergency, it should not be invested in products that cannot be redeemed at any time (without loss of value or excessive costs)
- Bear in mind that the profitability of products may not be guaranteed
- Compare the various investment alternatives on the market and the costs incurred (commissions)

The points mentioned by the CMVM are intended to make investors aware of the existence of risk. Risk that, according to Junior, Rigo & Cherobim (2005), can be defined as the possibility of financial loss, that is, the variability of return associated with a given financial asset. This uncertainty that corresponds to the doubt of obtaining a result, without a way to quantify the possibilities of occurrence of positive or negative situations. How much risk one will assume depends on the expected return, and it is expected that financial assets that present a greater possibility of profitability will also present a higher level of risk (Sapienza, Zingales, & Maestripieri, 2009). According to the Portuguese Securities Market Commission (2012), the main risks associated with investing in financial instruments are:

- Market risk: possibility of the evolution of the product's price on the market affecting the amount receivable by the investor.
- Credit risk: possibility of the issuer of the product failing to pay the income or initial capital of the product.

- Foreign exchange risk: possibility of the currency in which the product was issued devaluing against the currency of the investor's country.
- Liquidity risk: impossibility of redeeming the product at any time and recovering the corresponding amount or proceeding with its sale at a fair price.
- Fiscal risk: possibility of aggravation of the income or capital gains taxation regime.
- Political risk: possibility of devaluation arising from the political circumstances of the issuer's State of origin.
- Risk of conflict of interest: possibility of your interests being subordinated to the interests of the issuer and/or the interests of the intermediary offering you the product.

In global terms, it is of interest to quantify the risk the investor is subject to, and as mentioned by Ross, Westerfield, Jaffe & Lamb (2015) the measurement of risk is made through standard deviation and variance. And according to these authors, the total risk of a financial asset results from two components of different nature:

- Systematic risk: a systematic risk is any risk that influences many assets, each to a greater or lesser degree. This type of risk affects all investments and cannot be eliminated.
- Unsystematic (specific) risk: it is a risk that affects a single asset, or a reduced number of assets. This type of risk can be reduced by diversifying the investment portfolio.

Financial risk tolerance is the maximum amount of uncertainty one must accept when making a financial decision, and different investors may have different tolerance levels (Hibbert et al., 2013). The risk aversion theory is the study of the behavior of investors when subjected to situations of uncertainty. It is based on the analysis of people's behavior to understand how they act in the face of risks in the field of finance (Dewi & Barlian, 2020). According to the CMVM (2012), the risk profiles consider several investor characteristics:

- The greater or lesser aversion to the risk of loss of invested capital.
- The preference for a short or medium- and long-term application.
- The level and fluctuations of expected profitability resulting from previous choices.

Also, according to CMVM (2012) there is no harmonized classification of investor profiles among financial institutions that act as financial intermediaries. However, the most common designations for the different types of investors are:

- Conservative or prudent: This is an investor looking for products with the guarantee of invested capital and returns that he expects to be at least compatible with short-term interest rates. This investor is averse to the main risks: capital, income, and liquidity. It prefers guaranteed capital investments, with a shorter maturity, which may be associated with a lower return. As the name suggests, investors with a conservative profile are more cautious, seek capital stability and are more risk averse, that is, they prefer to invest their money in products that do not present any or low risk. In general, we can say that the conservative investor looks for concrete gains with the least possible risk, even if for that he has a low return. Typically, your investment portfolio is made up of fixed income assets and only a small portion of stocks or alternative products. The distribution of their assets is focused more on bonds than on shares, with the objective of making a return on capital and expecting a return superior to traditional banking applications. BNI Bank (2020)
- Balanced or moderate: This is an investor who is looking for products with the guarantee of the invested capital, but who is willing to take a longer period for this investment to accommodate any possible adverse fluctuation in income. It assumes a preference for guaranteed capital investments but accepts their portfolio maintenance in the medium term.

We can say that the moderate profile investor tolerates taking a medium risk in their investments to obtain a higher return – they are willing to take a little higher risk to have a higher return. But at the same time, it doesn't do without some security. He invests across multiple asset classes, currencies, and geographies to strike a balance between security and profitability. In other words, he is not completely risk averse and accepts to take part of it to earn more, but he is also concerned about safety. Its classic asset distribution is 50% bonds and 50% shares, they aim to increase their capital and a higher profitability than products with medium/long-term interest rates. BNI Bank (2020)

- Dynamic: This is an investor who seeks a return higher than the market average, being available for medium- and long-term investments and to assume the risk of some losses in the invested capital.
- Bold: This is an investor who seeks products with a higher return when compared to the market average, being available for applications with a relatively shorter time horizon and assuming the risk of total or even greater loss of invested capital. Aggressive or bold investors are willing to expose their portfolio to greater risk and accept market fluctuations to have greater profitability – and even consider losing part of their equity in investments. In an investment portfolio, most of its applications are in variable rate products – stocks, stock funds, options, among others. Their asset distribution typically stands at 30% bonds and 70% shares, and they aim for returns like that of the stock market. BNI Bank (2020).

3. EMPIRICAL STUDY- METHODOLOGY AND RESULTS

Our goal is to analyse the profile of mainly young students facing financial risk. To obtain results that you can analyse a questionnaire was elaborated using Google Forms with several questions that attain that goal, applied to some students of Management from Lusófona University, this study is a preliminary one to extend to students at several Universities and several subjects of study. A sample of 50 responses were used (meanwhile we have obtained more answers to the questionnaire). Firstly, a univariate statistical analysis is done followed by a bivariate one. Demographic Analysis of the sample is presented based in **Figure 1**.

Gender

	Frequency	Percentage
Female	22	44,0
Male	28	56,0
Total	50	100,0

Age by intervales

	Frequency	Percentage
18 to 24 years	43	86,0
25 to 31 years	2	4,0
32 to 38 years	2	4,0
39 to 45 years	1	2,0
53 to 59 years	1	2,0
60 years or more	1	2,0
Total	50	100,0

Level of study currently

	Frequency	Percentage
1rst year g.	25	50
2nd year g.	7	14
3rd year g.	8	16
1rst year m.	8	16
Pos-Doc	2	4,0
Total	50	100,0

Monthly income

	Frequency	Percentage
Without income	1	2,0
until 500 €	1	2,0
Between 500 and 1000€	13	26,0
Between 1000 and 2500€	18	36,0
More than 2500 €	17	34,0
Total	50	100,0

Figure 1: Demographic description of the sample
(Source: the authors)

The main respondents are females, and students from 18 to 24 years, also they are studying at the 1rst year of graduation and concerning the range in which the gross monthly household income falls, one answered without income which we interpretated as the respondent was thinking about himself, the most common are (decreasingly in percentage, between 1000 and 2500€ (35%), More than 2500 € (34%) and Between 500 and 1000€ (26%).

Concerning the questions (closed answers) to analyse the financial level of risk of the respondents:
1) How would you rate yourself regarding your degree of risk regarding investments in financial products?
2) What attitude best describes your behavior towards investments in financial products?
3) As a rule, what would you do in the event of a sharp drop in the price of a security you held?

There were respectively 5 options for the first question and 4 options for the other two.

We codified them (we grouped two answers in the first case), according to CMVM (2012):
1) Conservative
2) Balanced
3) Dynamic
4) Audacious

In **Figure 2**, we present the results in percentage.

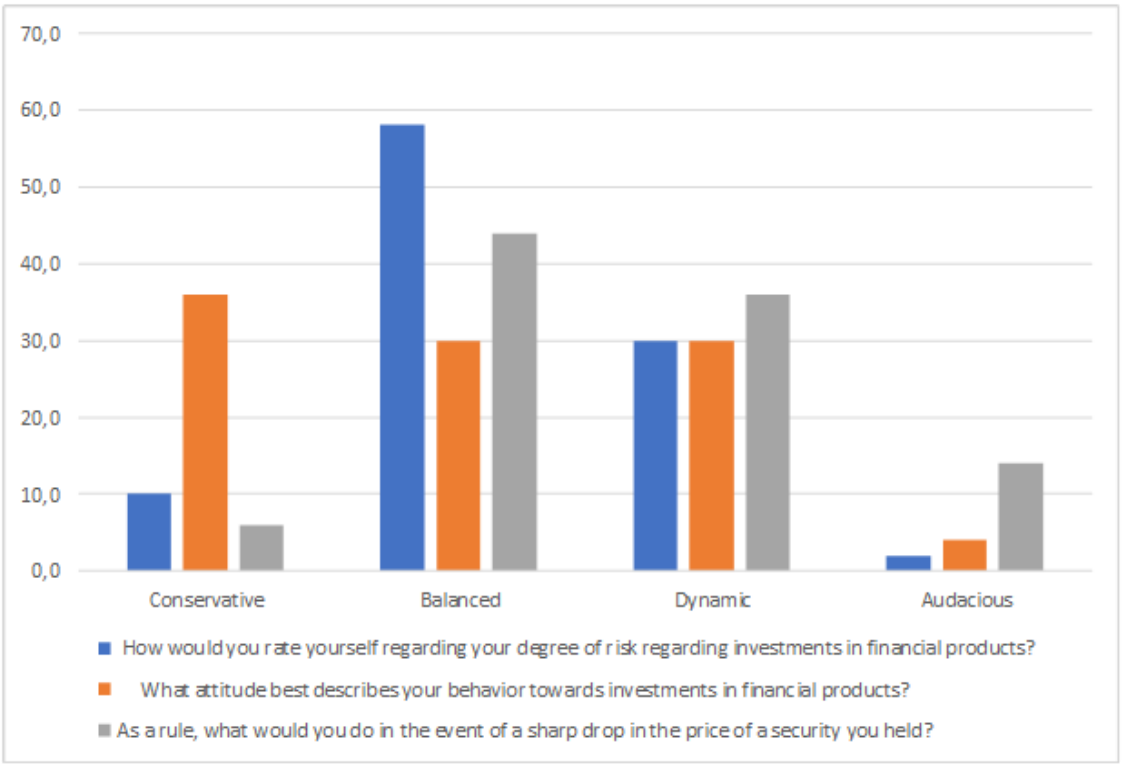

Figure 2: Analyse of the financial level of risk of the respondents (Source: The authors)

Analysing the Figure, we conclude the respondents are more coherent concerning their Dynamic profile.

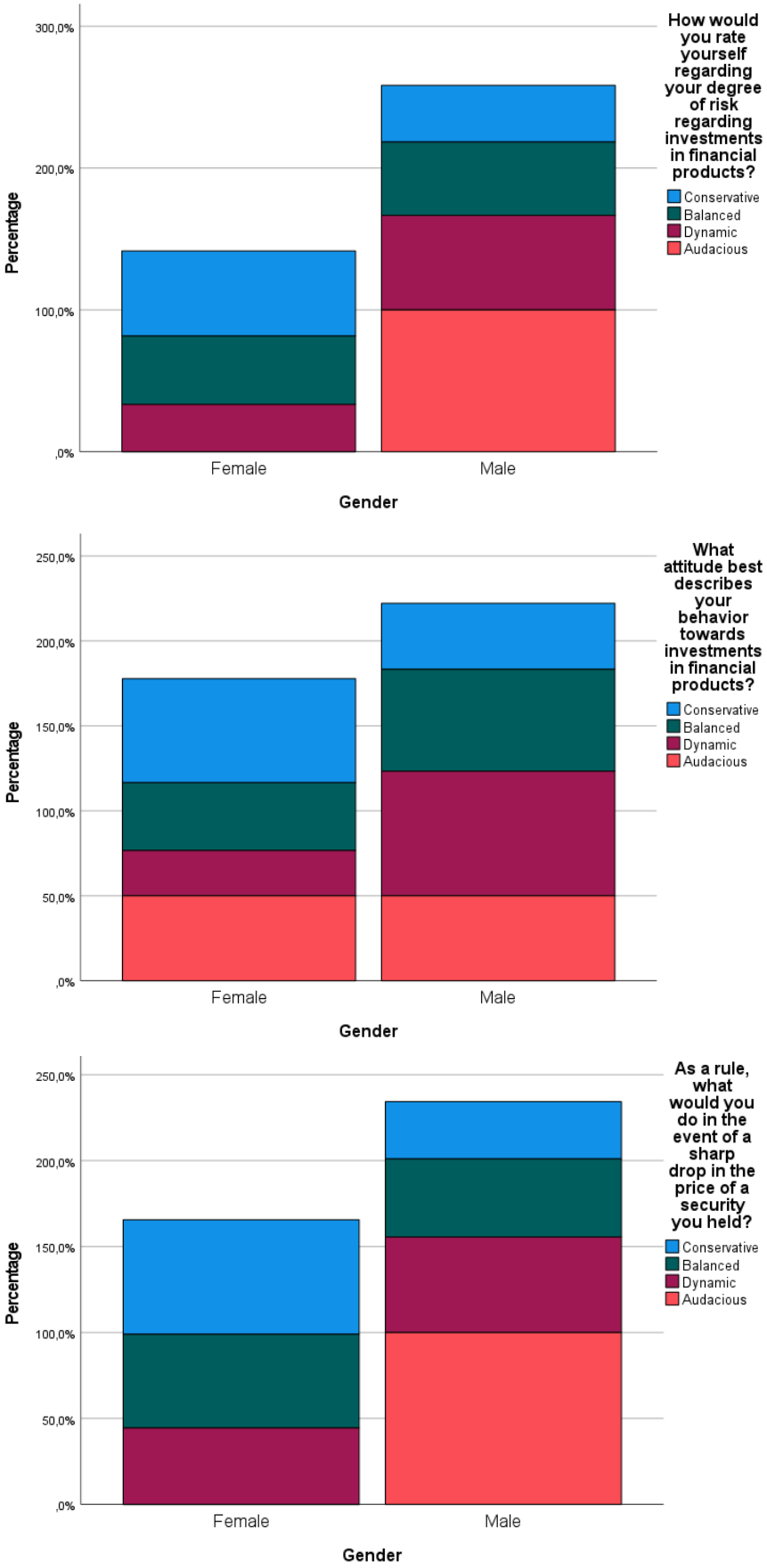

Figure 3: Analyse of the financial level of risk of the respondents by gender (Source: The authors)

Analysing **Figure 3**, we can conclude in general the men are more audacious than women, although concerning the attitude best describes behavior towards investments in financial products, we observed 4,5% for gender female and 3,6% for gender male. We also analyzed by age, level of study currently, and by monthly income, we conclude the respondents are approximately equally distributed by level of risk mainly between 18 to 24 years, but we don't find a pattern by level of study currently, neither by monthly income. Asking "What are the reasons that lead you to a concrete investment decision in securities?", (a closed answer) we observed:

	Percentage
Friends / acquaintances / family also invest	10
Friends / acquaintances / family also invest, Advice from the bank/account manager	2
Friends / acquaintances / family also invest, Realizing capital gains	4
Account/Banking Manager's Advice	16
Account/Banking Manager's Advice, Realizing Capital Gains	4
Liking the risk	4
Enjoying the risk, Friends / acquaintances / family also invest	2
Liking the risk, Out of habit, Friends / acquaintances / family also invest	2
Enjoying the risk, Out of habit, Friends / acquaintances / family also invest, Realizing capital gains	2
Out of habit	2
Because it has a higher yield than bank deposits	26
By having a higher yield than bank deposits, Realizing capital gains	2
Tax reasons	8
Tax reasons, Liking risk, Out of habit	2
Tax reasons, By habit	2
Tax reasons, By habit, Account/Banking Manager's Advice	2
Tax reasons, For having higher income than bank deposits, By habit	2
Tax reasons, Realizing capital gains	2
Realize capital gains	6

Table 1: Reasons that lead to a concrete investment decision in securities (Source: The authors)

The answer with a higher percentage (26%) is "Because it has a higher yield than bank deposits", followed by "Account/Banking Manager's Advice" (20%) and "Friends / acquaintances / family also invest" (16%).

The question "If you lost money on investments made in the securities markets, what do you attribute this loss of money to?" (a closed answer) is presented in the next table:

	Percentage
Bad advice	16
I never missed	46
Luck or lack of it	12
Market vicissitudes	24

Table 2: Lost money on investments made in the securities markets, this loss of money it is due of some reason

We observe that 46% of the respondents answered that never missed money in the securities markets, 24% answered that is due to market vicissitudes, 12% due to bad advice and 12% due to Luck or lack of it. By asking hypothetical questions (with closed answers) about what the respondents would do, and which allow us to analyze risk aversion and compare with the first three already analysed and not hypothetical, we obtain the results presented in the following figures, based on the questions:

1) In the future, would you like your investment portfolio to represent what percentage of your savings/investment?
2) If a friend tells you that you have invested in a certain financial asset and that the prospect of income is quite high despite that investment is not guaranteed capital, your decision would be:
3) Imagine that you have a savings of €10,000 and that you are given the opportunity to make an investment. Given the following scenarios, indicate the one you would most likely choose.

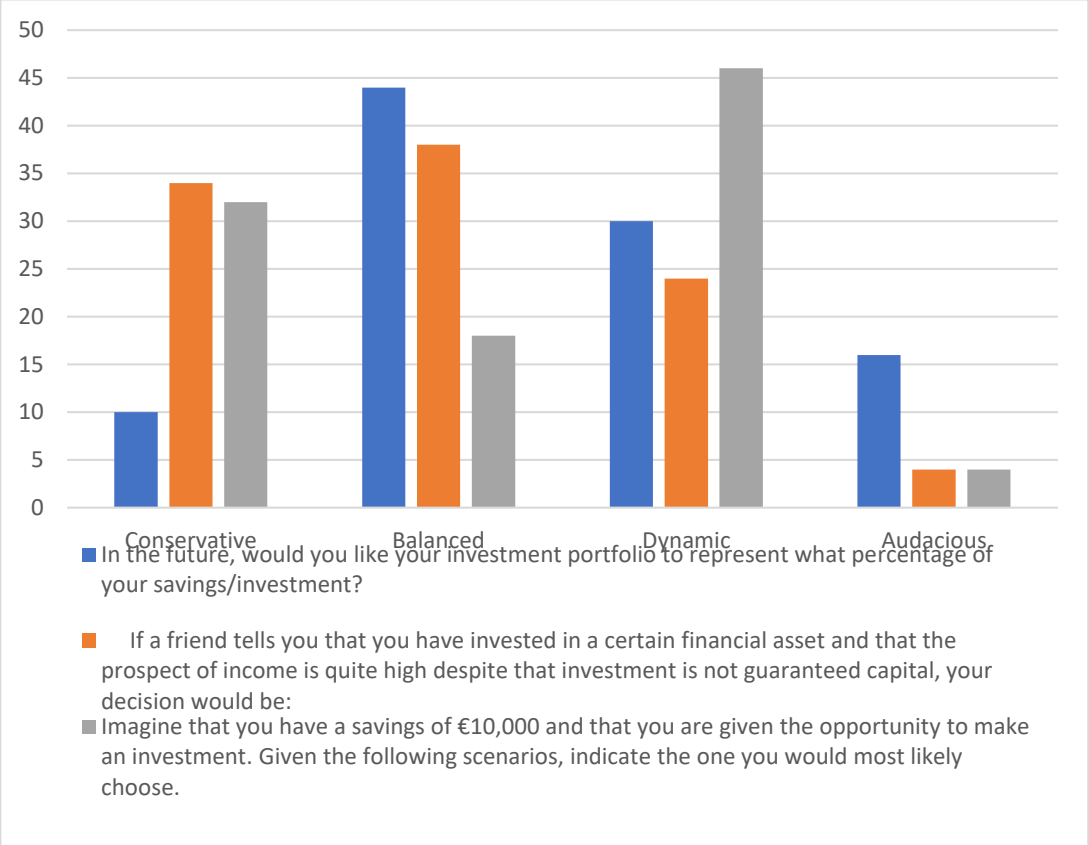

Figure 4: Analyse of hypothetical financial level of risk of the respondents (Source: The authors)

Analysing the figure, we conclude the respondents are not coherent concerning their hypothetical financial level of risk profile.

Figure following on the next page

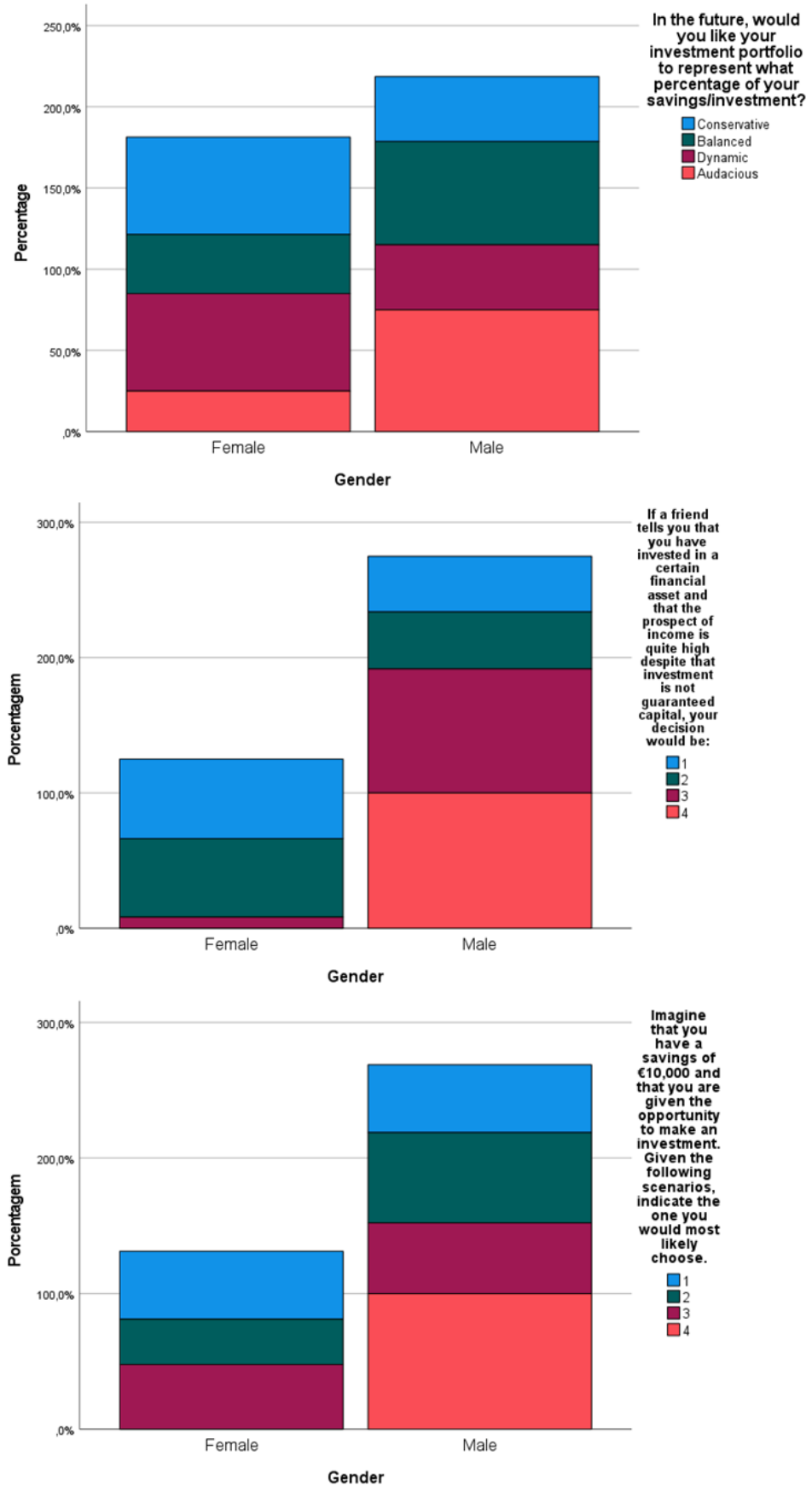

Figure 5: Analyse of hypothetical financial level of risk of the respondents by gender (Source: The authors)

Similarly, to the first situation studied "*Analyse of the financial level of risk of the respondents by gender",* in this case we also conclude men are more audacious than women. Also, we conclude that analysing by level of study currently, and by monthly income, we conclude the respondents are approximately equally distributed by level of risk mainly between 18 to 24 years, but we don't find a pattern by level of study currently, neither by monthly income.

4. CONCLUSION

We made the conclusion that the a*nalyse of the financial level of risk of the respondents by gender and the same analyse of hypothetical financial level of risk of the respondents by gender men are more audacious than woman. We can also conclude that the respondents* are approximately equally distributed by level of risk mainly between 18 to 24 years, but we don't find a pattern by level of study currently, neither by monthly income. We also conclude that the respondents are not coherent concerning their hypothetical financial level of risk profile. The answer to the causes of loss of money on investments made in the securities market is quite surprising, because the respondents are very assertive that they never missed (46%) and attribute the loss to a market vicissitudes (24%) or a bad advice. The limited sample don`t permit to obtain very accurate answers to the questions. In others studies we intend to increase the sample to have more robust conclusions.

LITERATURE:

1. Banco BNI (2020). *Que tipo de investidor você é?* Accessed on 09/19/2021 at https://bnieuropa.pt/que-tipo-de-investidor-voce-e/
2. Comissão de Mercado dos Valores Mobiliários. (2012). *Recomendações Aos Investidores*. 1–20. Retrieved from www.cmvm.pt.
3. Dewi, V. I., & Barlian, I. (2020). The Relationship Between Financial Literacy and Risk Profile Among Youth. *Frontiers Journal of Accounting and Business Research*, *02*(01), 27–31.
4. Dinç Aydemir, S., & Aren, S. (2017). Do the effects of individual factors on financial risk-taking behavior diversify with financial literacy? *Kybernetes*, *46*(10), 1706–1734. https://doi.org/10.1108/K-10-2016-0281
5. Hibbert, A. M., Lawrence, E. R., & Prakash, A. J. (2013). Does knowledge of finance mitigate the gender difference in financial risk-aversion? *Global Finance Journal*, *24*(2), 140–152. https://doi.org/10.1016/j.gfj.2013.07.002
6. Junior, A. B. L., Rigo, C. M., Cherobim, A. P. (2005). *Adinistração Financeira: Princípios, Fundamentos e Práticas Brasileiras.* Rio de Janeiro: Campus.
7. Ross, S. A., Westerfield, R. W., Jaffe, J. F., Lamb, R. (2015). *Administração Financeira.* São Paulo: AMGH Editora
8. Sapienza, P., Zingales, L., & Maestripieri, D. (2009). Gender differences in financial risk aversion and career choices are affected by testosterone. *Proceedings of the National Academy of Sciences of the United States of America*, *106*(36), 15268–15273. https://doi.org/10.1073/pnas.0907352106

DETERMINING THE FINANCIAL STABILITY OF CONSTRUCTION COMPANIES IN THE CZECH REPUBLIC

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ABSTRACT

Construction companies are often confronted with financial problems that may hinder their long-term successful operation. Stability is a necessary criterion for a company's long-term presence on the market. In the current situation, construction companies face a number of challenges that can be a serious problem for large companies as well. In order for a company to be able to successfully meet these challenges, it must be financially stable. Financial analysis is one of the tools of business management, based on values already achieved in the past, this method helps to measure the impact of business activities on the company itself. Using selected methods of financial analysis, the financial situation of individual construction companies will be analyzed. The paper deals with selected major construction companies in the Czech Republic and deals with the determination of the values of selected ratios in the financial analysis focusing on the financial stability of companies, namely the liquidity and indebtedness of the company. The selected time period for the financial analysis was the years 2016-2020. Input information for financial analysis is data from the financial statements of construction companies. Individual ratios were chosen as methods of financial analysis. The values obtained by applying the methods of financial analysis will be compared with national values in the field of construction and evaluated. Financial analysis can therefore be used as a tool to evaluate the processes taking place within the company, in particular, it provides a basis for business management and decision-making regarding the future direction of the company.

Keywords: *Construction Companies, Liquidity Ratio, Debt Ratio, Financial Stability, Czech Republic*

1. INTRODUCTION

At the present time, when two seasons of the covid pandemic are behind us and the world has stopped for a while, not only construction companies are facing various challenges. Financial stability is a necessary condition for the long-term survival of the company in the market. Financial stability is represented by two variables, namely liquidity, ie the company's ability to repay its short-term liabilities and indebtedness, the ratio between external resources and total resources. In today's situation, it is not entirely inconceivable that companies would fall into a "debt trap" and incapacitated. For this reason, the article focused on determining the financial stability of the largest construction companies in the Czech Republic over the years and the covid pandemic. Information on financial stability is obtained using the methods of financial analysis by the ratio method with a focus on liquidity indicators. When determining the values of liquidity indicators, assets and sources of their financing are compared in terms of life. Following a financial analysis, the stability of the construction companies concerned is assessed. Furthermore, the obtained values are compared with national values in the construction sector. The selected time period for the financial analysis was 2016-2020.

The conclusions are supported by a case study, which is based on information filled in the financial statements of selected large construction companies operating in the Czech Republic and the values of liquidity indicators from the Analytical Materials of the Ministry of Industry and Trade of the Czech Republic.

2. LITERATURE REVIEW

In adopting fundamental and long-term decisions of financial and non-financial character, businessmen should always carry out some sort of investigation into its existing operations and how their activity is reflected in the financial performance and health of the company – financial analysis. Financial analysis is a set of activities which aim is to identify and comprehensively assess financial situation of enterprises [1]. Methods of financial analysis are sorted out into three main types which are elementary methods (horizontal and vertical analyses), ratios methods and methods of system indicators use [2]. Liquidity refers to the ability of an enterprise to convert its assets into cash to cover all its outstanding liabilities on time, in the form and at the place required [3]. You want to know whether the company can lay its hands on the cash to repay you. That is why credit analysts and bankers look at several measuresof liquidity. Liquid assets can be converted into cash quickly and cheaply. Liquidity ratios also have some less desirable characteristics. Because short-term assets and liabilities are easily changed, measures of liquidity can rapidly become outdated. But more liquidity is not always a good thing. For example, efficient firms do not leave excess cash in their bank accounts. They don't allow customers to postpone paying their bills, and they don't leave stocks of raw materials and finished goods littering the warehouse floor. In other words, high levels of liquidity may indicate sloppy use of capital [4]. You need a benchmark for assessing a company's financial position. It is generally useful to compare the company's current financial ratios with the equivalent ratios in the past and with the ratios of other firms in the same business [4]. Biliavska, Mizunska and Kovalchuk [5] assessed the liquidity of two companies and the basic problems of the unstable financial condition of the companies determined with the help of calculated coefficients and the steps expedient for the stabilization of the situation suggested. Zalewska in her article analyse the impact of various financial ratios used to evaluate a company's liquidity and solvency on the rates of return on the shares of companies [6]. The financial statements report what has actually happened to assets, earnings, dividends, and cash flows during the past few years, whereas the written materials attempt to explain why things turned out the way they did [7]. Drake, Quinn and Thornock do demographic analysis of financial statement downloads form EDGAR. They researched question: "Who uses financial statements?" [8]. Wahlen and Wieland examine whether investors can exploit financial statement information to identify companies with a greater likelihood of future earnings increases and whether stocks of those companies generate [9]. Collective of authors deal with question of assessing the impact of fair-value accounting on financial statement analysis [10]. Mehta and Bhavani in their article do financial statements analysis on Tesla for years 2015-2017 [11]. Błach and Wieczorek-Kosmala presented in their article partial results of the research project conducted in Poland and Silesia aiming at analyzing changes in the financial condition of non-financial companies in time of financial crisis [12].

3. METODOLOGHY

The paper is focused on determing the liquidity ratios of the five significant construction companies in the Czech Republic and comparison of this values with national values in the construction field, which can be found in Analytical Materials from the Ministry of of industry and trade of the Czech Republic, which contain national values of liquidity and other indicators in the field of construction [13]. Selected financial analysis indicators - liquidity ratios and debt ratios, are prepared for the period 2016-2020.

The construction companies evaluated are METROSTAV, GEOSAN GROUP, EUROVIA CS, STRABAG, SUBTERRA - all of these companies belong to the big construction companies in the Czech Republic. Financial analysis can be carried out based on the data obtained from the financial statements. To perform financial analysis of liquidity ratios we need to know the values from the financial statements, specifically from the balance sheet - current assets, receivables, short-term financial assets, funds and short-term payables. For the calculation of debt ratio we need to know total assets and liabilities (external resources) with accrued liabilities. It is useful to compare the values achieved with those achieved within the industry - each industry has its own specificities. In the context of financial analysis, the liquidity ratio is used to assess the liquidity of a company, and in practice it is common to distinguish three levels of liquidity - current ratio, quick ratio and cash ratio.

3.1. Current ratio

L3 = Current ratio = current assets / current liabilities (1)

The current ratio is the ratio of current assets to current liabilities, it reflects the number of times current liabilities are covered by current assets. A high current ratio could mean that the company has a lot of money tied up in nonproductive assets, such as excess cash or marketable securities. Or perhaps the high current ratio is due to large inventory holdings, which might well become obsolete before they can be sold. Thus, shareholders might not want a high current ratio [7]. Current liquidity refers to the ability of an enterprise to pay its liabilities within one year, where current assets are considered to be funds available to pay liabilities.
The recommended value of this indicator is 1.5-2.5.

3.2. Quick ratio

L2 = Quick ratio = (receivables + marketable securities + cash) / current liabilities (2)

The quick, or acid test, ratio is calculated by suma of receivables, marketable securities and cash to current liabilities. The ratio is similar to the current ratio where inventories are excluded from the calculation. Some current assets are closer to cash than others. Thus managers often exclude inventories and other less liquid components of current assets when comparing current assets to current liabilities. They focus instead on cash, marketable securities, and bills that customers have not yet paid. This results in the quick ratio [4]. The recommended Quick Ratio values are set between 1.0 and 1.5.The specific amount of the ratio depends on the field of activity in which the company operates, its market position, as well as its strategy and other factors.

3.3. Cash ratio

L1 = Cash ratio = (marketable securities + cash) / current liabilities (3)

The cash ratio can be defined as the ratio of marketable securities and cash to current liabilities. A company’s most liquid assets are its holdings of cash and marketable securities. That is why analysts also look at the cash ratio [4]. The recommended values after the Cash Ratio are in the range of 0.2 to 0.5. It is usually until 0.9 for the Czech Republic.

3.4. Debt ratio

Debt ratio = liabilities (external resources) / total assets (4)

The ratio of total liabilities to total assets is called the debt ratio, or sometimes the total debt ratio. Creditors prefer low debt ratios because the lower the ratio, the greater the cushion against creditors' losses in the event of liquidation [7]. The data for the calculation can be taken from the Balance Sheet, the item accrued liabilities is added to the item liabilities (external resources). The document from the Ministry of Industry and Trade of the Czech Republic does not contain this ratio, but we can derive the calculation of this indicator from the calculation of the Equity / Assets indicator.

4. CASE STUDY

Five large construction companies operating in the Czech Republic were selected for the case study - METROSTAV, GEOSAN GROUP, EUROVIA CS, STRABAG, SUBRTERRA. The case study is focused on liquidity ratios - current ratio, quick ratio, cash ratio. In addition, the debt ratio is quantified. The obtained values were compared with the values published in the Financial Analysis of the Corporate Sphere for 2016-2019, prepared by the Ministry of Industry and Trade of the Czech Republic (no document has yet been published for the year 2020). It is important to follow the same methodology for determining the values of liquidity ratios for comparison. The material contains data for individual years and industries according to NACE - since the article deals with construction companies, the values considered are from NACE F, i.e. construction.

4.1. Current ratio

L3	2016	2017	2018	2019	2020
METROSTAV	2.12	2.20	2.01	2.00	2.54
GEOSAN GROUP	1.59	1.58	1.27	1.56	1.82
EUROVIA CS	2.11	2.29	2.09	1.82	1.82
STRABAG	1.64	1.77	1.65	1.48	1.57
SUBTERRA	1.32	1.79	1.42	1.81	1.87
Industry average - construction	*1.95*	*2.04*	*1.93*	*1.73*	*x*

Table 1: Values of L3
(Source: personally calculated data)

The recommended current ratio is 1.5-2.5. It can be seen that the current ratio values achieved in Table 1 reach the recommended values, with the exception of SUBTERRA (2016 and 2018), STRABAG and GEOSAN GROUP in 2018. We can see increasing values of this current ratio in the last year evaluated, which means an increase in liquidity. The average for the construction industry is around the average L3 values for these companies. From the perspective of the current ratio assessment, it can be said that METROSTAV and EUROVIA CS have above-average current ratio values in all the years assessed, so these companies are more liquid.

L3	2016	2017	2018	2019	suma	rank
METROSTAV	2	1	1	5	9	2.
GEOSAN GROUP	4	5	5	3	17	5.
EUROVIA CS	1	2	2	2	7	1.
STRABAG	3	4	3	4	14	4.
SUBTERRA	5	3	4	1	13	3.

Table 2: The ranking of results for L3
(Source: personally calculated data)

Table 2 shows the ranking of the evaluated construction companies according to the deviation from the industry average in the current ratio. The construction company EUROVIA CS shows the highest compliance with the values of industry average of current ratio.

4.2. Quick ratio

L2	2016	2017	2018	2019	2020
METROSTAV	1.91	2.03	1.77	1.83	2.28
GEOSAN GROUP	1.48	1.53	1.21	1.55	1.81
EUROVIA CS	2.03	2.19	1.97	1.72	1.72
STRABAG	1.61	1.73	1.60	1.42	1.53
SUBTERRA	0.64	1.57	1.32	1.66	1.73
Industry average - construction	*1.68*	*1.73*	*1.61*	*0.94*	*x*

Table 3: Values of L2
(Source: personally calculated data)

The recommended current ratio is 1.0-1.5. We can see that the quick ratio values achieved in Table 3 meet or exceed the recommended values, with the exception of SUBTERRA (2016). We can see increasing values of this ratio in the last year evaluated, which implies an increase in liquidity. The average for the construction industry reaches values higher than the recommended values in 2016-2018. On this basis, we can generally say that the entire construction industry performs well in terms of L2 liquidity. From the perspective of the quick ratio assessment, METROSTAV and EUROVIA CS are again above the industry average current ratio in all years assessed, so these companies are again more liquid compared to the other companies assessed.

L2	2016	2017	2018	2019	suma	rank
METROSTAV	3	4	2	5	14	4.
GEOSAN GROUP	2	3	5	2	12	2.
EUROVIA CS	4	5	4	4	17	5.
STRABAG	1	1	1	1	4	1.
SUBTERRA	5	2	3	3	13	3.

Table 4: The ranking of results for L2
(Source: personally calculated data)

Table 4 provides the ranking of construction companies according to their deviation from the industry average in the quick ratio. STRABAG shows the highest compliance with the industry average of quick ratio values.

4.3. Cash ratio

L1	2016	2017	2018	2019	2020
METROSTAV	0.97	0.80	0.59	0.67	0.79
GEOSAN GROUP	0.49	0.25	0.28	0.37	0.55
EUROVIA CS	0.28	0.08	0.10	0.13	0.10
STRABAG	0.58	0.72	0.74	0.51	0.40
SUBTERRA	0.20	0.45	0.42	0.61	0.60
Industry average - construction	*0.64*	*0.64*	*0.68*	*0.44*	*x*

Table 5: Values of L1
(Source: personally calculated data)

The recommended values for the cash ratio are in the range of 0.2-0.5. The development of the cash ratio can be seen in Table 5. It can be seen that EUROVIA CS has values for this ratio lower than the recommended value in 2017-2020. The company METROSTAV has very high values of this ratio. The average value of the cash ratio within the construction sector reaches higher values than the recommended value, which indicates a more cautious approach to liquidity.

L1	2016	2017	2018	2019	suma	rank
METROSTAV	3	2	2	4	11	2.-3.
GEOSAN GROUP	2	4	4	1	11	2.-3.
EUROVIA CS	4	5	5	5	19	5.
STRABAG	1	1	1	2	5	1.
SUBTERRA	5	3	3	3	14	4.

Table 6: The ranking of results for L1
(Source: personally calculated data)

Table 6 shows the ranking of firms by the deviation from the industry average in the cash ratio. STRABAG shows the highest compliance with the industry average of cash ratio, as is the case for the quick ratio.

4.4. Debt ratio

Debt ratio	2016	2017	2018	2019	2020
METROSTAV	60,87%	58,92%	62,64%	63,87%	56,66%
GEOSAN GROUP	71,78%	70,82%	80,93%	79,55%	73,82%
EUROVIA CS	60,05%	64,41%	65,13%	64,28%	68,11%
STRABAG	78,74%	74,28%	77,65%	77,46%	77,59%
SUBTERRA	77,43%	69,57%	74,11%	71,61%	71,47%
Industry average - construction	*54,71%*	*54,51%*	*55,77%*	*57,46%*	*x*

Table 7: Values of debt ratio
(Source: personally calculated data)

For all companies we see a higher share of external sources in financing the company's activities, which indicates a high use of financial leverage, GEOSAN GROUP and STRABAG have the highest share of foreign capital. The providers of foreign capital are interested in the lowest possible debt of the owner. i.e. a low value of this indicator. The average values of the construction industry show that enterprises work with a higher share of foreign resources.

Debt ratio	2016	2017	2018	2019	suma	rank
METROSTAV	2	1	1	1	5	1.
GEOSAN GROUP	3	4	5	5	17	4.
EUROVIA CS	1	2	2	2	7	2.
STRABAG	5	5	4	4	18	5.
SUBTERRA	4	3	3	3	13	3.

Table 8: The ranking of results for debt ratio
(Source: personally calculated data)

The ranking of companies according to the difference from the industry average in the debt ratio was determined. The ranking of companies can be seen in Table 8. METROSTAV shows the highest conformity with the industry average of debt ratio values.

5. CONCLUSION

The ranking of the companies was built using a points system. The deviation from the industry average of the assessed ratios was compared. In this way, the ratios within the years 2016-2019 were evaluated and the ranking of the enterprises according to the amount of deviation was determined. In this way, we obtained the ranking of the evaluated enterprises according to how the values of the selected ratios correspond to the industry average. An overview of the ranking of the companies can be seen in Table 9.

rank	L3	L2	L1	Debt ratio
METROSTAV	2.	4.	2.-3.	1.
GEOSAN GROUP	5.	2.	2.-3.	4.
EUROVIA CS	1.	5.	5.	2.
STRABAG	4.	1.	1.	5.
SUBTERRA	3.	3.	4.	3.

Table 9: Ranking of companies by correspondence with the industry average by ratios during 2016-2019

(Source: personally calculated data)

Based on the values in Table 9, it cannot be said definitively that any of the companies assessed were closest to the industry average across the period 2016-2019 for all ratios simultaneously. In terms of the current ratio, METROSTAV and EUROVIA CS achieve high values of this type of liquidity, while EUROVIA CS is also the closest to the L3 industry average. These companies are highly liquid in terms of the current ratio. From the perspective of lenders and banks, higher values of this ratio increase the certainty that liabilities will be paid. On the other hand, GEOSAN GROUP has the lowest L3 value among the companies assessed and is also the furthest away from the industry average. METROSTAV has the highest quick ratio. The lowest L2 values are achieved by SUBTERRA, which, with the exception of 2016, shows stable quick ratio values. STRABAG's values are the closest to the industry average in all years evaluated. EUROVIA CS shows the largest difference between the achieved values and the industry average values - this company also shows above-average L2 values, which is higher than the recommended liquidity value. METROSTAV has the highest cash ratio, while EUROVIA CS has the lowest cash ratio, where the values achieved by this company are lower than those recommended under L1. STRABAG's values are closest to the industry average in almost all years evaluated. EUROVIA CS shows the largest difference between the values achieved and the industry average, similarly to L2. METROSTAV has the lowest debt ratio among the companies evaluated, while at the same time it is the closest to the industry average of this ratio. Lower debt ratio values mean less leverage than other companies, but take means higher stability. STRABAG, on the other hand, has the highest external resources ratio, which means that it uses more leverage, which in turn may mean lower stability. At the same time, STRABAG shows the highest difference between the values achieved and the industry average. On the basis of the mentioned above, it can be stated that METROSTAV shows the highest stability among the evaluated construction companies both in terms of liquidity indicators and debt ratio. Determining financial stability is important for the management of a company. Using the methods of financial analysis, liquidity ratios and debt ratios can be determined, which give us some idea of the stability of the construction company.

For a better interpretation of the calculated indicators, it is advisable to compare the values obtained with the values of indicators within the industry in which the enterprises operate. In this way. we can obtain information on how the individual enterprises are performing in comparison with the values of the industry.

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LITERATURE:

1. Scholleová. H.. 2008. Ekonomické a finanční řízení pro neekonomy. Praha: Grada.
2. Ondrušková. E.. 2014. Vývoj stavební zakázky během její realizace. Vysoké učení technické v Brně. Fakulta stavební.
3. Režňáková. M.. 2010. Řízení platební schopnosti podniku. Praha: Grada.
4. Brealey. R.A. & Myers. S.C. 2017. Principles of corporate finance 12th ed.. New York: Irwin McGraw-Hill.
5. Biliavska, A. V., Mizunska, I. R., Kovalchuk, N. O. 2019. The Analytical Aspects of Management of the Liquidity Level and Solvency of Enterprises in the Energy Industry, Biznes Inform, Vol. 1(492), 255-261.
6. Zalewska,J. & Nehrebecka,N.(2020).Liquidity and solvency of a company and the rate of return – an analysis of the Warsaw Stock Exchange. Central European Economic Journal,6(53) 199-220. https://doi.org/10.2478/ceej-2019-0013.
7. Brigham. E.F. & Ehrhardt. M.C.. 2011. Financial management: theory and practice 13th ed.. Mason. OH: South-Western Cengage Learning.
8. Drake, Michael S, Phillip J Quinn a Jacob R Thornock. Who uses financial statements? A demographic analysis of financial statement downloads from EDGAR. Accounting horizons [online]. SARASOTA: AMER ACCOUNTING ASSOC, 2017, 31(3), 55-68 [cit. 2021-10-26]. ISSN 0888-7993. Available at: doi:10.2308/acch-51736.
9. Wahlen, James M a Matthew M Wieland. Can financial statement analysis beat consensus analysts' recommendations? Review of accounting studies [online]. Boston: Springer US, 2011, 16(1), 89-115 [cit. 2021-10-26]. ISSN 1380-6653. Available at: doi:10.1007/s11142-010-9124-5.
10. Rodríguez-Pérez, Gonzalo, John Slof, Magda Solà, Margarita Torrent a Immaculada Vilardell. Assessing the Impact of Fair-Value Accounting on Financial Statement Analysis: A Data Envelopment Analysis Approach. Abacus (Sydney) [online]. 2011, 47(1), 61-84 [cit. 2021-10-26]. ISSN 0001-3072. Available at: doi:10.1111/j.1467-6281.2011.00331.x.
11. Mehta, Anupam a Ganga Bhavani. Financial statements analysis on Tesla. Academy of Accounting and Financial Studies journal [online]. Arden: Jordan Whitney Enterprises, 2018, 22(6), 1-9 [cit. 2021-10-26]. ISSN 1096-3685.
12. Błach, Joanna a Monika Wieczorek-Kosmala. The debt management in time of crisis: survey evidence from Poland and Silesia. Trendy ekonomiky a managementu [online]. Vysoké učení technické v Brně, Fakulta podnikatelská, VI(10), 21-32 [cit. 2021-10-26]. ISSN 1802-8527.
13. https://www.mpo.cz/cz/rozcestnik/analyticke-materialy-a-statistiky/analyticke-materialy/

REASONS WHY CADETS DROP OUT OF THE MILITARY EDUCATION IN BULGARIA

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ABSTRACT
The purpose of this research is to reveal the true reasons that lead cadets to drop out of the "Combined Joint Task Forces" faculty at the "Vasil Levski" National Military University. The cadets are dismissed for disciplinary reasons for providing false data during university admission, for systematic non-fulfilment of the curriculum requirements or the violation of regulations of the university.
Keywords: *Military education, Training, Cadets, Drop out*

1. INTRODUCTION

The purpose of this research is to reveal the true reasons that lead cadets to drop out of the "Combined Joint Task Forces" faculty at the "Vasil Levski" National Military University. The reasons cadets drop out of the university are listed in the Regulations for the structure and activity of the "Vasil Levski" National Military University, State gazette issue 83 dated 19 September 2003, amended in issue 56 dated 8 July 2005, amended in issue 109 dated 23 December 2008. The cadets drop out of the University before graduating in the following cases: for being convicted of an intentional crime of general nature; due to poor academic performance; for disciplinary reasons; voluntary withdrawal; due to unfitness for military service, established by the competent health authorities; in case of revocation of a permit for access to classified information. The above listed reasons shall also include cases when certain students are physically unable to attend lectures at the "Vasil Levski" National Military University, i.e., because of death.

2. REASONS WHY CADETS DROP OUT OF THE MILITARY EDUCATION IN BULGARIA

The cadets are dismissed for disciplinary reasons for providing false data during university admission, for systematic non-fulfilment of the curriculum requirements or violation of the regulations of the university. The curriculum requirements are considered systematically non-fulfilled if a student is absent more than 50 percent of the study time per semester, failed semester or poor performance. A semester is considered failed if a student fails to pass 3 or more units due to the non-fulfilment of academic assignments. The curriculum requirements are considered non-fulfilled due to poor performance with 3 poor grades received during the regular exam session; two poor grades received on a second attempt; one poor grade obtained on a final attempt.

Systematic violation of the university regulations means three or more violations of the requirements defined by the university regulations and committed by the students during their course of study. According to the Law on defence and armed forces of the Republic of Bulgaria, a dismissal for disciplinary reasons, considering the fact that the cadets are servicemen with a special status, is obligatory in the following cases (Terziev, Nichev, Bogdanov, 2017a; Terziev, Nichev, 2017b; Terziev, Nichev, 2017c):

- conviction of an intentional crime of general nature or deprivation of the right to take public service jobs or to exercise the profession or activity;
- violationof the prohibition to join political parties, movements or coalitions for political purposes and to take actions that would violate their political neutrality and to participate in strikes and trade union actions;
- failure to submit a declaration pursuant to the Law on defence and armed forces of the Republic of Bulgaria;
- systematic violations of the rules for protection of classified information that have resulted in an unauthorised access within the meaning of the Classified Information Protection Act;
- absence from work without an excusable reason for two consecutive business days;
- malfeasance in office;
- state property damage, waste of materials, raw materials, energy and other resources, which caused significant damages to the state;
- showing up at work under the influence of alcohol or drugs, thus being unable to perform official duties;
- when a serviceman is guilty of causing death or severe body injury of his subordinate serviceman.

Analysis of the legislation of the Republic of Bulgaria and "Vasil Levski" National Military University shows that the above-mentioned reasons why cadets drop out of the university before graduating can be grouped as follows:

- for disciplinary reasons, incl. for being convicted of an intentional crime of general nature and in case of revocation of a permit for access to classified information;
- due to poor academic performance;
- voluntarily;
- for health reasons;
- due to death.

The research includes the cadets of military programmes of study "Organization and management of tactical units of the Land Forces" with the following programmes of study: "mechanized infantry and tank troops", "signals intelligence and electronic warfare", "nuclear, biological and chemical protection troops and ecology", "military engineering", "intelligence"; "Organization and management of tactical units for logistics support" with the following programmes of study: "rear troops and fuel and lubricants logistics", "movement and transportation" and "tank troops -technical and automobile troops" and "Organization and management of military formations at the tactical level" with the following programmes of study: "mechanized infantry and tank troops", "signals intelligence and electronic warfare", "nuclear, biological and chemical protection troops and ecology", "military engineering", "intelligence", "material resources, movement and transportation" and "tank and automobile equipment" for the period from 2008 to 2017. Summarized data for the study group are shown in Table 1 (Terziev et al., 2020).

Military programmes of study	Number of students	Reasons for dropping out				
		For disciplinary reasons	Due to low performance	By own will	For health reasons	Due to death
Mechanized infantry and tank troop	514	-	-	12	-	2
Intelligence	267	1	4	7	1	-
Signals intelligence and electronic warfare	127	-	-	3	-	-
Military engineering	247	-	1	3	1	-
Nuclear, biological and chemical protection troops and ecology	178	1	-	1	-	-
Material resources, movement and transportation	429	-	-	16	2	-
Tank and automobile equipment	363	-	3	6	2	-

Table 1: Summarized data for the study group

The results demonstrate that the average percentage of the cadets who dropped out from the total number of students in a given military programme of study for the period 2008-2017 is 3,11%. The highest number of such students is in the following military programmes of study: "intelligence" and "material resources, movement and transportation", 4,87% and 4,20% respectively, and the lowest is in the programme of study "nuclear, biological and chemical protection troops and ecology". The percentage of the cadets who dropped out of the total number of students in a given military programme of study for the period 2008-2017 is shown in Figure 1.

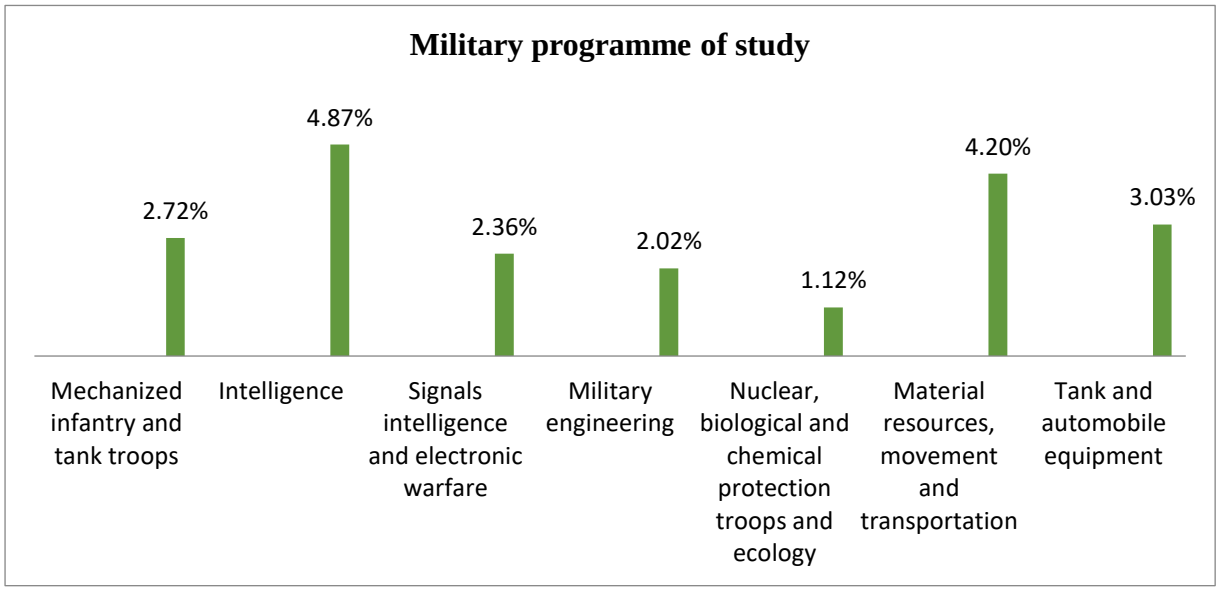

Figure 1: Percentage of cadets who dropped out of the total number of students in a given military programme of study

Analysis of the data shows that 72,73% of the cadets who dropped out, withdraw voluntarily and the lowest number are those who drop out due to death or for disciplinary reasons.

Figure 2 demonstrates the distribution of cadets who dropped out by groups of reasons for their dismissal from the University before graduating of the total number of such students for the period 2008 – 2017.

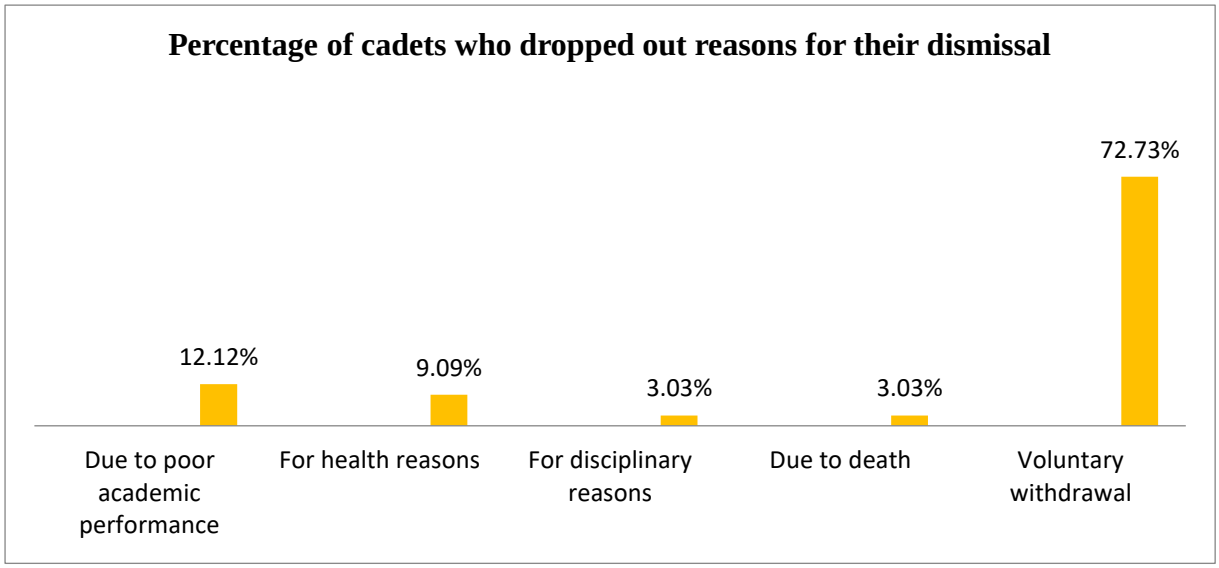

Figure 2: Percentage of cadets who dropped out by reasons for their dismissal from "Vasil Levski" National Military University

Based on the analysis we can conclude that the cadets who withdraw voluntarily constitute almost three quarters of the total number of the dismissed students and this requires a more detailed study of this group of reasons. The cadets who withdraw voluntarily by military programmes of study are presented in Figure 3 and in Figure 4 you will find the dynamics of the voluntary withdrawal of cadets for the period 2008-2017.

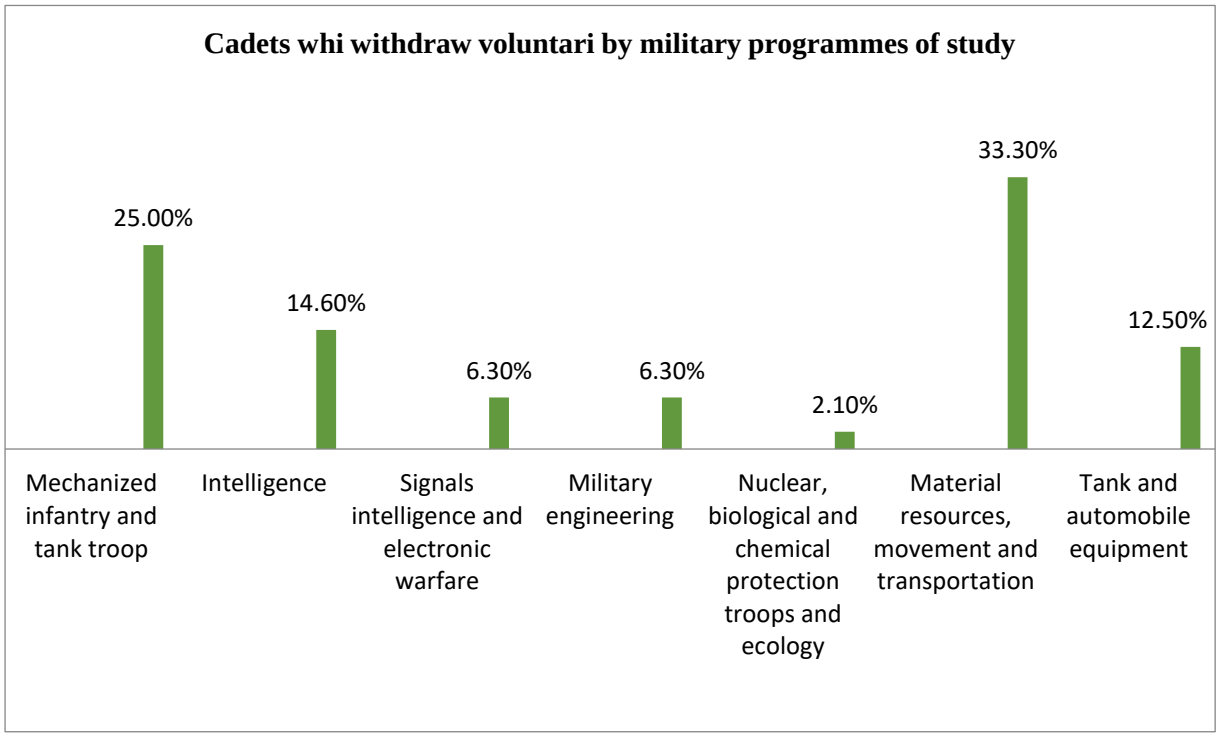

Figure 3: Cadets who withdraw voluntarily by military programmes of study

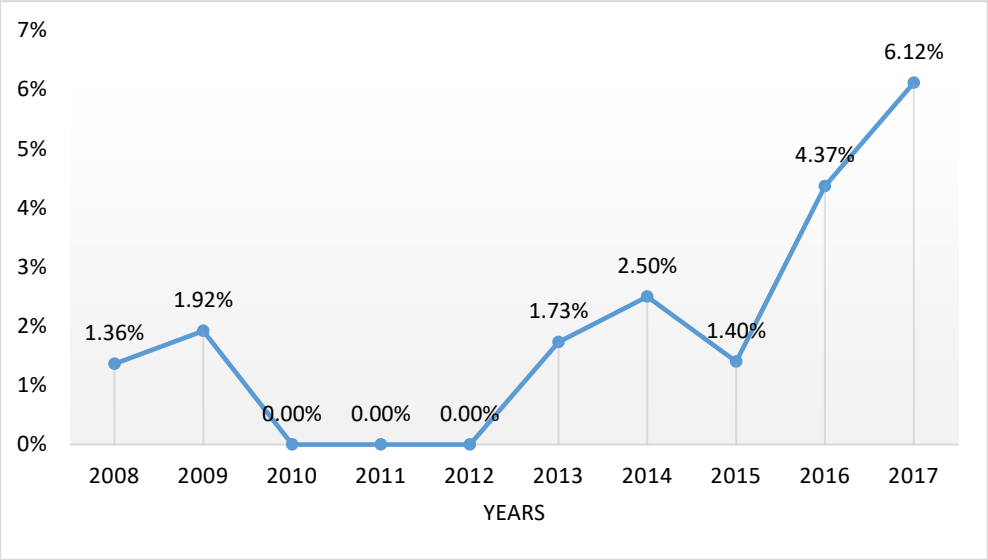

Figure 4: Dynamics of the voluntary withdrawal of cadets for the period 2008-2017

According to the analysis, the highest number of cadets drop out from military programmes of study "material resources, movement and transportation" and "mechanized infantry and tank troops", 33,3% and 25% respectively. The period 2016-2017 is characterised by a significant excess of those wishing to drop out from the University above the average and for the period 2010-2012 there are no students who withdraw voluntarily. For this reason, the period 2016-2017 will be analysed in detail. The second most important reason why cadets drop out is the poor academic performance (12,12%). The cadets dismissed due to their poor performance are presented by military specializations in Figure 5 and Figure 6 shows the dynamics of the dismissal of cadets by poor academic performance for the period 2008-2017. Based on the data shown, we can conclude that the number of cadets who dropped out of the civil engineering programmes of study is equal to the number of cadets who dropped out of the civil non-engineering programmes of study.

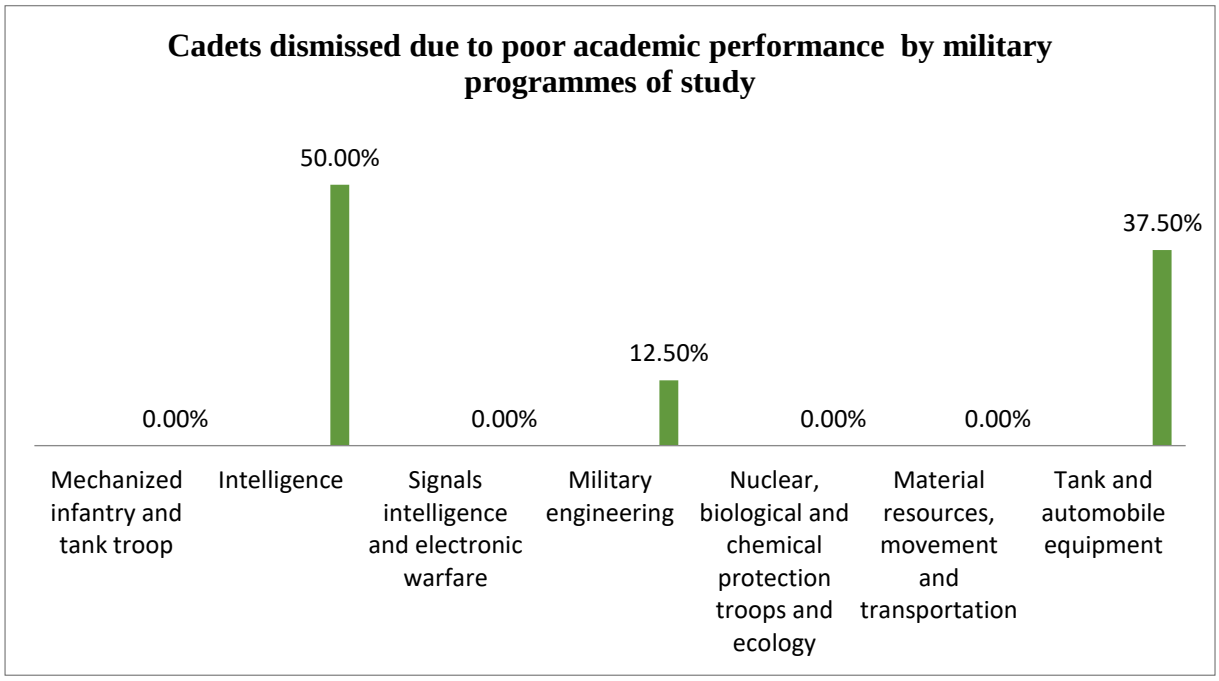

Figure 5: Cadets dismissed due to poor academic performance by military programmes of study

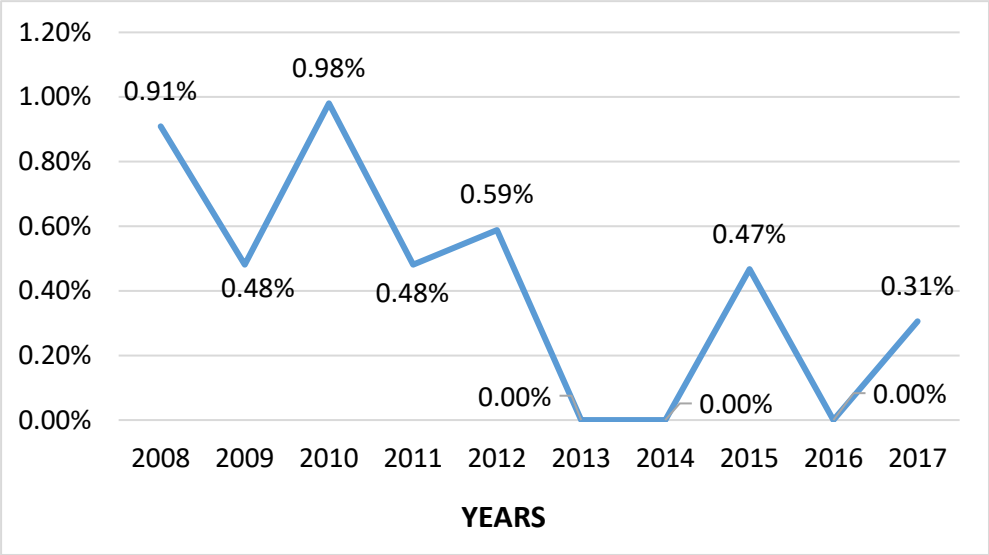

Figure 6: Dynamics of the dismissal of cadets by poor academic performance

What is of interest for this research is the number of cadets studying during the analysed period. We can observe that during the analysed period there are two trends: for the period 2008-2014 the number of cadets studying in "Combined Joint Task Forces" faculty tend to gradually decrease and for the period 2014-2017 the number of cadets studying in "Combined Joint Task Forces" faculty increased more than twice (204%). The two trends are shown in Figure 7.

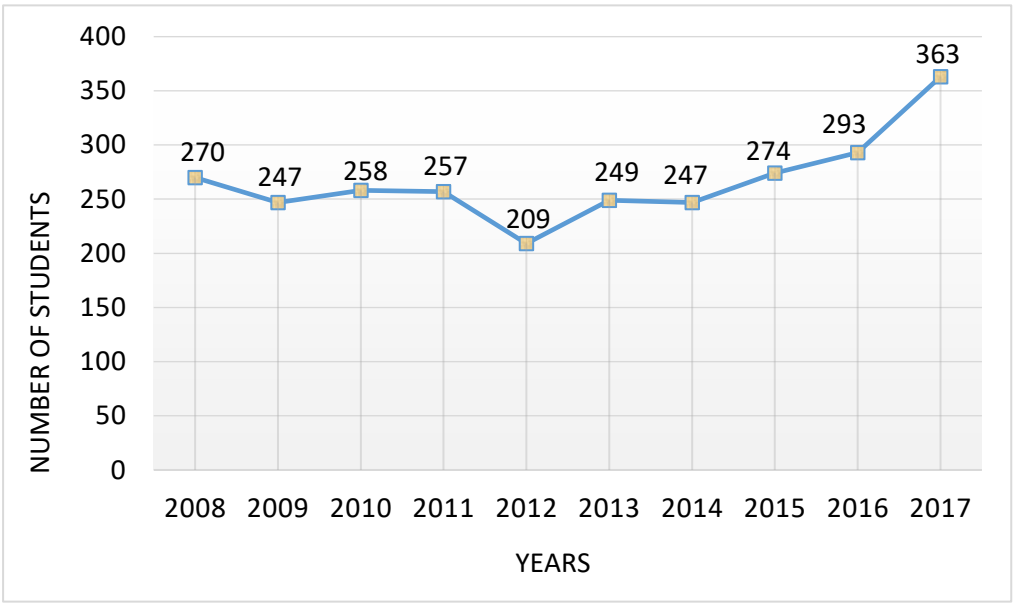

Figure 7: The actual number of cadets studying in "Combined Joint Task Forces" faculty for the period 2008-2017

3. CONCLUSION

To summarize, we can make the following conclusions (Ivanov, Koynakov, Simeonov, 2021a; Ivanov, Koynakov, Simeonov, 2021b; Georgiev, Simeonov, Ivanov, 2021c; Georgiev, Simeonov, Ivanov, 2021d; Terziev, Nichev, 2017d):

- Psychologists of the "Military psychology" section process the data and prepare a summary report with the results from the survey for each category of students, which then is presented to the Chancellor of the University.

Based on the analysis of the results, Department of education and accreditation of "Vasil Levski" National Military University prepares a plan for improving the quality of the educational process and lifestyle and submits it to the Academic Council for approval.

- The methods of assessing the quality of education and maintaining a programme of study sets the goal, criteria, indicators, procedure and sequence for assessing the quality of education and maintaining a programme of study. It aims to collect, summarize and present the information to the university academic management (faculty), university (faculty) committee to improve the activities in all fields, thereby improving the quality of education and research to achieve compliance with the announced academic standards in the programme of study. The methods were adopted at a meeting of the Academic Council in 2003, amended and supplemented at a meeting No. 11 dated 29 May 2007 of the Academic Council and were never implemented.

LITERATURE:

1. Terziev, V., Nichev, N., Bogdanov, P. (2017a). Comparative analysis of the formation of military professional skills in the cadets to be trained in logistics specializations. // Proceedings of ADVED 2017- 3rd International Conference on Advances in Education and Social Sciences 9-11 October 2017- Istanbul, Turkey, 2017, pp.671-677, ISBN: 978-605-82433-0-9.
2. Terziev, V., Nichev, N. (2017b). Research on the management skills and abilities acquired in the military education system. // CBU International Conference Proceedings 2017, March 22-24, Prague, Czech Republic, Innovations in Science and Education, 2017, pp.846-850, ISSN 1805-997X (Print), ISBN 978-80-88042-07-5 (Print edition).
3. Terziev, V., Nichev, N. (2017c). Developing the readiness for the organizational activity of the cadets. // CBU International Conference Proceedings 2017, March 22-24, Prague, Czech Republic, Innovations in Science and Education, 2017, pp.915-919, ISSN 1805-997X (Print), ISBN 978-80-88042-07-5 (Print edition).
4. Terziev, V., Georgiev, M., Nichev, N., Solovev, D., Bogdanov, P. (2020). Implementation of the strategy card in the system of military education. // Proceedings of SOCIOINT 2020-7th International Conference on Education and Education of Social Sciences, 15-17 June 2020, International Organization Center of Academic Research, Istanbul, Turkey, 2020, pp. 137-146, ISBN: 978-605-82433-9-2.
5. Ivanov, I., Koynakov, K., Simeonov, S. (2021a). Research macronutrients intake from cadets in tactical classes. // 21st RSEP International Economics, Finance & Business Conference – Virtual/Online 19-20 May 2021, HCC. St. Moritz Hotel, Barcelona, Spain, RSEP, Ankara/Turkey, 2021, pp. 26-30, ISBN: 978-605-70583-0-0/May 2021.
6. Ivanov, I., Koynakov, K., Simeonov, S. (2021b). Research the energy status of military personel in tactical exercises in a mountain forest area. // 21st RSEP International Economics, Finance & Business Conference – Virtual/Online 19-20 May 2021, HCC. St. Moritz Hotel, Barcelona, Spain, RSEP, Ankara/Turkey, 2021, pp. 111-116, ISBN: 978-605-70583-0-0/May 2021.
7. Georgiev, M., Simeonov, S., Ivanov, I. (2021c). Factors for the successful implemantation of self-dependant training during the educative process. // 20th RSEP International Economics, Finance & Business Conference – Virtual/Online 17-18 February 2021, Holiday Inn Vienna City, Vienna, Austria, Review of Socio-Economic Perspectives RSEP, Ankara, Turkey, pp. 129-136, ISBN: 978-605-06961-8-9.
8. Georgiev, M., Simeonov, S., Ivanov, I. (2021d). Independent training of the cadets. // 20th RSEP International Economics, Finance & Business Conference – Virtual/Online 17-18 February 2021, Holiday Inn Vienna City, Vienna, Austria, Review of Socio-Economic Perspectives RSEP, Ankara, Turkey, pp. 137-145, ISBN: 978-605-06961-8-9.

9. Terziev, V., Nichev, N. (2017d). Analysis of the environment for military educational system functioning and its impact on the preparation of cadets for military professional activities in the republic of Bulgaria. // Proceedings of SOCIOINT 2017- 4th International Conference on Education, Social Sciences and Humanities 10-12 July 2017- Dubai, UAE, 2017, ISBN: 978-605-82433-1-6, pp.627-630.

MANAGEMENT DURING CRISES: THE CASE OF THE EAPN ACTION ON THE NORTH REGION OF PORTUGAL

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ABSTRACT

The issue of poverty is one of utmost importance in socio-economic terms. Regarded as a plague that has to be tackled, the reality is that poverty reveals to be an everlasting phenomenon. Furthermore, a succession of recent worldwide and European crises, including a severe global financial and economic crisis, considered to be as serious as a Great Recession, plus crises on the European Union (EU), such as the Euro currency crisis and the exit of the United Kingdom (UK) from the EU, and, finally, last but not least, the Covid-19 global pandemic crisis, certainly resulted in a significant increase of poverty in EU countries. For many years that some European countries are being very active while fighting the poverty phenomenon. Nevertheless, there have been some important hurdles. For example, there has been German, Swedish and British opposition to the size of the fight against poverty, according to the "Europe 2020" Strategy (Jessoula, 2015). In the meantime, the UK has left the EU, but the need to continue to reduce poverty remains. This paper discusses the economic and social impact of the pandemic crisis on poverty and social exclusion in Portugal, through the analysis of the European Anti-Poverty Network (EAPN) action in the North Region of Portugal. The results presented in this paper suggest that the economic consequences of the pandemic crisis on poverty and social exclusion are evident in the Northern region of Portugal, demanding a high level of managing ability in order to be able to deliver meaningful results.

Keywords: *Crises Management, EAPN, European Union, Portugal, Poverty, Social Exclusion*

1. INTRODUCTION

The issue of poverty is one of utmost importance in socio-economic terms. Regarded as a plague that has to be tackled, the reality is that poverty reveals to be an everlasting phenomenon. Furthermore, a succession of recent worldwide and European crises, including a severe global financial and economic crisis, considered to be as serious as a Great Recession, plus crises on the European Union (EU), such as the Euro currency crisis and the exit of the United Kingdom (UK) from the EU, and, finally, last but not least, the Covid-19 global pandemic crisis, certainly

resulted in a significant increase of poverty. For many years that some European countries are being very active while fighting the poverty phenomenon. Nevertheless, there have been some important hurdles. For example, there has been German, Swedish and British opposition to the size of the fight against poverty, according to the "Europe 2020" Strategy (Jessoula, 2015). In the meantime, the UK has left the EU, but the need to continue to reduce poverty remains. Of the three countries referred, Germany was the one which tried most to approach European intentions, setting the goal of reducing the number of long-term unemployed by 330,000 individuals before 2020 - corresponding to about 660,000 people living in the same low-intensity households, according to national government estimates (Jessoula, 2015). On the other hand, Sweden and the United Kingdom have largely ignored common European indicators. Sweden even proposed a reduction in the share of individuals aged between 20 and 64 who were not in the labour force, the long-term unemployed and all others who were on long-term sick leave. Following the same line, the United Kingdom re-proposed to the EU, national numerical targets in force that were included in the Child Poverty Act 2010 (Jessoula, 2015). At the same time, there seems to be a conflict in terms of the indicators used by the European Union for the construction of its policies to fight poverty, since these do not always portray reality. In fact, sometimes, employees are not considered to be poor despite the growth of the working poor group. Another example of conflict related to the indicators is the calculation of the poverty line. This is due to the member states having different notions of poverty and social exclusion, but also, because the poverty line is relative in terms of its establishment. As if incomes are generally reduced in society, the poverty line will fall. The consequence of this is that part of the population will be able to be lifted of poverty despite their income remaining unchanged (Rodrigues *et al*., 2016). It can be said that poverty and social exclusion largely revolve around access (Madanipour, 2011), whether it is access to employment opportunities, housing, health, the provision of services by the institutions or, even, due to the isolation imposed on them by the space where they live. This paper discusses the economic and social impact of the pandemic crisis on poverty and social exclusion in Portugal, through the analysis of the European Anti-Poverty Network (EAPN) action in the North Region of Portugal. The results presented in this paper suggest that the economic consequences of the pandemic crisis on poverty and social exclusion are evident in the Northern region of Portugal, demanding a high level of managing ability in order to be able to deliver meaningful results.

2. THE CONCEPTS OF POVERTY AND SOCIAL EXCLUSION

According to the definition of the United Nations (UN), poverty is a widespread state of discrimination and social exclusion that hinders certain individuals from sharing life in society, preventing them from participating in collective decision-making processes. The United Nations' definition of poverty is therefore substantially comprehensive and may include different levels of individuals. Considering the economic aspects, the most common methodology for measuring the degree of poverty and social exclusion, poverty can be classified into different types, namely (Pęciak, R. and Tusińska, M., 2015):

- ***Objective*** *- it is a definition of poverty, whose indicator considers the access of individuals to different types of resources, contrasting with the autonomy or freedom of decision on where to apply them, allowing to draw an objective line of poverty.*
- ***Subjective*** *- in this definition of poverty, individuals are subjectively assessed for real income, considering life expectations, which are often out of step with reality. These subjective indicators result from the deficiencies in the consumption of needs and the perceived over-indebtedness and scarcity.*
- ***Absolute*** *- absolute poverty or extreme poverty, indicates that the individual is in a limit situation, in which basic needs are not covered, resulting in a general lack of food, clothing and housing.*

*According to the World Bank (*Ferreira*, et al., 2015) an individual is considered to be in absolute poverty when his income is of less than US$ 1.90 per capita a day.*

- ***Relative*** *- the relative poverty rating is measured by comparing the individual's situation with the rest of their environment. This idea of poverty is closely associated with the notion of inequality in the country/society under study. For example, Eurostat interpretations are often used to calculate this poverty rate in communities in Europe.*

The European Union's definitions of poverty, while specific, are compatible with the United Nations' general definition of poverty. Nonetheless, in general, in Europe, with some exceptions, poverty does not present itself with the dramatic character presented by the United Nations.

3. RESEARCH GOAL AND METHODOLOGY

In accordance with the generic purpose for this paper, as stated in the introduction, which is the theme of poverty and social exclusion, in particular the case of Portugal and its Northern Region, two dimensions of analysis for this problem are evident: the first dimension of analysis and identification of the problems of poverty and social exclusion, in order to characterize them. In the second dimension, the EAPN and the Portuguese case appear, in the level at which we seek to analyse the problem. Thus, the formulation of this problem is linked with two types of motivations:

- Practical motivations, which aim to contribute for a better understanding of poverty and social exclusion in Portugal, in the context of the member states of the European Union. Preferably presenting work with practical value for EAPN and the associated district centres of the Portuguese North Region, ultimately benefiting the most disadvantaged population.
- Scientific motivations, related to the methodological aspects required to achieve the ultimate objective of the paper, specifically the need for planning and organizing a research, which for Pizam (1994) is necessary to achieve a systematic and objective formulation, without ambiguities, thus fulfilling the academic purpose.

While combining these motivations, the main objective of this paper is to examine the planning and management of poverty and social exclusion actions carried in the European Union, analysed through the case of the North Region of Portugal. This objective can be achieved through the analysis of EAPN's activity in the Northern region of Portugal. For this purpose, a study of the Northern district centres of EAPN in Portugal was carried, allowing to draw conclusions regarding their actions, objectives, lines of intervention, supporting programs, partnerships, among others. Accordingly, this paper focuses on the analysis of the Northern district centres of the EAPN, seeking to contextualize and understand a subjective and multifaceted reality, given that, despite the reduced size of Portugal, there are significant differences between the them. Thus, it becomes more appropriate to use a qualitative research method, using secondary data analysis.

4. POVERTY AND SOCIAL EXCLUSION IN PORTUGAL

In Portugal, there are about 2.2 million people at risk of poverty or social exclusion, i.e. about 21.6% of the Portuguese population (INE, 2018). Further analysing data from the INE (2018), it may be observed that the risk of monetary poverty reaches 18.3% of the population, corresponding to approximately 1.9 million people. Very low labour intensity is one of the indicators that make up the risk of poverty or social exclusion and measures the population living in households, where its members worked less than 20% of their total potential over a period of 12 months (EAPN, 2018a,b). Taking into consideration the condition of this part of the population, the absence of a job is clearly an element of vulnerability.

Hence, Portugal continues to have rates of poverty or social exclusion measured in terms of monetary poverty, which are still significantly high for the employed population. Regarding the material and social deprivation indicator, it is concluded that this is a reality experienced by 16.6% of the Portuguese population. It should be noted, however, that this value decreased for the first time since the beginning of the decade (INE, 2018). There is a big difference in the results of the indicators associated with poverty or social exclusion, considering the population's education level. The population with basic education is clearly the most vulnerable, while the population with higher education has the lowest values in all indicators. In resume, the data indicates that poverty and social exclusion, monetary poverty and very low labour intensity reach higher proportions of the populations living in rural areas. However, the population of large urban centres is more exposed to severe material deprivation (EAPN Portugal, 2018b).

5. THE EAPN ACTION IN THE NORTH REGION OF PORTUGAL

As presented in an earlier research by Leite *et al.* (2021), the Portuguese section of EAPN was founded on December 17th, 1991, with headquarters in Porto, which is informally considered the capital of the North region of Portugal. Being an organization recognized as a National Solidarity Association, it obtained, in 1995, the status of Non-Governmental Development Organizations (NGDOs). Following 28 years of activity, the EAPN Portugal integrates 19 district centres covering the entire national territory. Since 2005, conditions have been created for the existence of a centre for each district. EAPN is present in 19 Districts of Portugal. A few years later, in 2006, the district centres were divided by regions, with the aim of: i) favouring networking; ii) increase the level of knowledge about social issues in different regions of the country; iii) allow the development of more concrete strategic actions. Since then, there have been three Regional Centres, namely:

- Northern Regional Center, which includes the District Centers of Aveiro, Braga, Bragança, Porto, Viana do Castelo and Vila Real;
- Centre of the Central Region, composed of the District Centers of Castelo Branco, Coimbra, Guarda, Leiria, Santarém and Viseu;
- Southern Regional Center, which groups the District Centers of Beja, Évora, Faro, Lisbon, Portalegre and Setúbal.

A brief characterization of the Northern Regional Centres is made in Table 1 and Table 2, shown below.

Table following on the next page

Northern Regional Centers	Aveiro	Braga	Bragança	Porto	Viana do Castelo	Vila Real
Date of establishment	1998	1997	2005	1995	2005	2005
Legal nature	Associa-tion	Associa-tion	Associa-tion	Associa-tion	Associa-tion	Associa-tion
Total operating expenses	Not disclosed	Not disclosed	5741.2€	35402.91€	10701.2€	37922.75€
Projects and initiatives	21	26	15	24	18	20
Benefited people/ organizations	Romani and school community Refugees CNPCJ Homeless (NIPSA) CLAS CSF Social action workers EAPN Associates	Professionals (social action) Associates Technical IPSS, CNC, CLC. School community People in a situation of poverty/ exclusion Seniors Children PAR professionals	Students and researchers Associates Technical People in poverty and social exclusion Northern Regional Centers Social Education Interns at Escola Superior de Educação Beneficiaries of the Solidarity Network of Social Responses Children and Youth Professionals	3rd sector workers and institutions People in situations of poverty and social exclusion. CLC EAPN Associates and Technicians Entities Children CLAS NIPSA and homeless. GAL CPCJ School community	People in a situation of poverty/ exclusion General population Associates Counties; IPSSs; NGOs; Social Networks Unemployed Young people looking for their first job CLC School community	EAPN Associates and Technicians People in poverty and social exclusion Municipality Managers Social service interns at the University of Trás-os-Montes and Alto Douro Civic Economy Initiative (IEC) Children and Youth Protection Commissions IPSS Northern regional centers CDSS

Table 1: Presentation of the Northern Regional EAPN Centres
(Source: Prepared by the authors with data available from the EAPN centers' 2016 annual reports. EAPN Portugal, 2016a,b,c,d,e,f)

As shown in Table 2, in terms of the number of members of the Northern centres, it is the Porto centre that has the highest number of members, both collective (59) and individual (85), in a total of 144 members. The centre with fewer associates is Viana do Castelo with 15 collective and 7 individual associates, although the Viana do Castelo centre was created ten years after Porto, in 2005. Vila Real and Bragança Centres were also created that year, both having a considerably higher number of members than Viana do Castelo.

Table following on the next page

	Number of members		Percentage	
Northern Regional Centers	**Collective**	**Individual**	**Collective**	**Individual**
Aveiro	40	43	48.2	51.8
Braga	Not disclosed	Not disclosed	-	-
Bragança	48	13	78,7	21,3
Porto	59	85	41	59
Viana do Castelo	15	7	68,2	31,8
Vila Real	36	38	48,6	51,4
Total	**198**	**186**	**51,6**	**48,4**

Table 2: Dimension of the Northern EAPN Centers in number of members (Source: Prepared by the authors with data available from the EAPN centres' 2016 annual reports. EAPN Portugal, 2016a,b,c,d,e,f)

Within the scope of its attributions and objectives, the EAPN develops its own projects and actions and supports existing projects in North Region of Portugal, creating a network between different associations and organizations to combat poverty and social exclusion in the main territory of action. The observation of Table 3 allows to identify the main type of actions, and corresponding strategies based on strategic partnerships, that the EAPN Northern Regional Centres follow in order to manage a better presence in the field, while aiming to reduce the poverty and its effects on the society.

Table following on the next page

Northern Regional Centres	Strategic Partnerships
Aveiro	School clusters; Entities that are part of the Supra-Municipal Platforms ("Restricted group of entities - technicians from EAPN PT and technicians from local social networks -, which play a role in the construction of opinions and guidelines subsequently issued to all Platform partners.", EAPN Portugal, 2016f, 6) of the Entre Douro e Vouga and Baixo Vouga Social Networks. Entities that are part of the CLAS of Anadia, Aveiro, Estarreja and Murtosa ("Entities that are part of the Executive Core of CLAS: Aveiro School Group, Aveiro City Council, Aveiro District Center of ISS, IP, Baixo Vouga II Health Center Group - Aveiro Health Center, General Directorate of Social Reintegration - Baixo Vouga and Santa Casa da Misericórdia de Aveiro team." EAPN Portugal, 2016a, 28). Entities that make up Vera Cruz's CSF. Entities that are part of the NIPSA in Aveiro. Entities that are part of the LAG.
Braga	Municipality of Vila Verde; SAAS of the Social Center of Polvoreira; ADCL - Association for the Development of Local Communities, Social Center of the Parish of S. Victor, Social Center of the Parish of Chorense, Social Center of the Parish of Souto, Social and Parish Center of Cervães, Social and Parish Center of Cibões, Social Center and Covide Parish, Moimenta Social and Parish Center, Rio Caldo Social and Parish Center, Vilar Social and Parish Center, Vilar da Veiga Social and Parish Center, Valdosende Social Solidarity Center, Portuguese Red Cross/Braga Delegation, Fraterna, Bomfim Foundation, Terras de Bouro Municipality (Social Network), Santa Casa da Misericórdia da Póvoa Lanhoso, Santa Casa da Misericórdia of Vieira do Minho; University of Minho/Health Sciences Research Center; Braga Municipality, APAV, other partners, namely Professional Schools; Associação de Fomento Amarense; Associations Association Lameiras Residents Association; Barrosas Sta Eulália Parish Social Center; Bomfim Foundation; Cultural and Social Center of Santo Adrião; Braga Social Network; Local partners and employees internal and external to the organization.
Bragança	Associates; EAPN (headquarters); Third sector organizations; Polytechnic Institute of Bragança; ASCUDT; Betânia Foundation; Work Kolping; Dia Centro do Centro Social and P. Sto Condestável; Kindergarten of the Social Center and P. Sto Condestável - Social Center and P. Sto Mártires; EAPN Portugal - Development and Training Department; CLAS for each territory; Social Networks of Bragança, Mirandela, Carrazeda de Ansiães, IPDJ and secondary schools (Miguel Torga School and Emídio Garcia School); NGOs; IPSS.
Porto	Associates; Social Network - Supra-Municipal Platforms of the Greater Porto and Tâmega Social Network; CLAS; NIPSA; GAL; CNPCJR; GTEducation; Montebello School; CLC.
Viana do Castelo	Associates; Viana do Castelo City Council; EGOR; District IPSS; Social institutions with IHR protocols; Schools; ESPROMINHO; Viana do Castelo Social Network.
Vila Real	Vila Real District Social Security Center (CDSS); University of Trás os Montes and Alto Douro (UTAD); Counties; Associates; Third Sector Organizations; EAPN Portugal - Development and Training Department; Vila Real Platform of the Civic Economy Initiative; Children and Youth Protection Commissions; CLDS Porta D'Ouro de Mesão Frio; Santa Casa da Misericórdia of Mesão Frio; Santa Casa da Misericórdia de Sabrosa; ISS I.P.; Social Networks of Mesão Frio, Peso da Régua, Vila Real and Santa Marta de Penaguião; NGOs; IPSS.

Table 3: Northern EAPN Region Strategic Partnerships
(Source: Prepared by the authors with data available from the EAPN centres' 2016 annual reports. EAPN Portugal, 2016a,b,c,d,e,f)

It is relevant to note that three Northern regional centres are located on the Northern coastal region versus three in the inland. According to the tables shown above, the full dataset available reveals the accomplishment of 124 projects, with the districts of Braga and Porto having the greatest achievements, 26 and 24 projects respectively.

This means that, although one district is in the coast and another in the inland, at the outset the hotspots of poverty are not correlated to their location in the inland or the coast, but to the population density, given that there is a greater concentration of poverty and social exclusion, at least with a greater need for action, in large urban centres. Indeed, Braga and Porto are the most densely populated districts in the North, soon followed by Aveiro, the third most populated district. As far as partnerships are concerned, the Braga district centre is the one which has established the most partnerships in 2016.

6. CONCLUSION

The projects, or actions, commonly developed by the Northern centres are primarily by their internal their staff, namely EAPN technicians and external groups. External groups are also in action, characterized by actions made by technicians from coming from Governmental or State agencies with professional profiles related to social action, as well as for other strategic partners, such as the Church and other private social action institutions. At the external level, there are also actions aimed at target populations, minorities in particular, such as: the Romani community and refugees. In a way, we may be led to conclude that poverty and social exclusion have a profile of ethnicity and beliefs and are not focused on the majority of the population in Portugal. There are also specific actions for the homeless and unemployed. In terms of age, children, youth and the elderly were the focus of the projects. All of this indicates that poverty and social exclusion are related to age and dependence on other adult individuals to survive, or improve the quality of life, being a type of structural problem. At the same time, we can verify that unemployed populations, even if temporarily, can be considered populations at real risk of poverty and social exclusion. Therefore, ultimately, it will be the income indicator that will tell us who the poor and the excluded are, but, as it is well known, the are many several different causes. After all, poverty is not solely related to income, but above all to ethnicity, beliefs or age. According to Amélia Bastos (2015, 101), children "seem to be one of the age groups most affected by the effects of the economic crisis that has been felt since 2008". Despite the efforts of the European Union, for example, through the Convention on the Rights of the Child, "after 2008, the situation of Portuguese children globally worsened, namely with regards to the rate of child poverty, absenteeism and school dropout, exposure to situations of disruption in the family environment, abuse and violence." (Sarmento *et al*., 2015, 94). In turn, the elderly suffered from reforms to "social protection and welfare state reform systems" (Lopes, 2015, 162). Trend already pointed out by Loureiro in 2010 (203) "the State has been reducing its influence in the provision of social services due to lack of resources". In the Braga report, active aging is the focus of the "Bem Envelhecer III" project. "Since all trends suggest that individuals will be asked to assume more and more responsibility for the provision of their well-being in old age" (Lopes, 162) it is possible to understand the importance of aging healthily so that the elderly can continue to be responsible for themselves until later, which also makes them not dependent on third parties, as dependency is often an exclusion factor. At this point, the elderly can resemble children as they are also dependent. According to Rodrigues *et al*. (2016, 12-13), between 2010 and 2014 "poverty in households with children evolved in a particularly unfavourable way" surpassing even the elderly. The EAPN Portugal contributes to the fight against the poverty across the North region of Portugal with its regional branches, organized by districts. However, such contribution could and should be more relevant, provided it could benefit from more official support and financing. At the current condition, managing the needs of the actions required to effectively fight poverty at a large scale proves to be a very hard task. Therefore, the obvious recommendation is for the public powers to be more concerned and to ensure better conditions to the EAPN regional centres, in order to allow them to better fulfil their duties while delivering higher standards of actions against the malaise of the poverty and social exclusion phenomena.

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LITERATURE:

1. Bastos, A. (2015). Pobreza infantil, diagnóstico e reflexão sobre os indicadores de aferição in Pobreza e Exclusão Social em Portugal – Contextos, Transformações e Estudos.
2. EAPN Portugal (2016a). Plano de atividades 2016. EAPN Portugal: Núcleo Distrital de Aveiro.
3. EAPN Portugal (2016b). Plano de atividades 2016. EAPN Portugal: Núcleo Distrital de Braga.
4. EAPN Portugal (2016c). Plano de atividades 2016. EAPN Portugal: Núcleo Distrital de Castelo Branco.
5. EAPN Portugal (2016d). Plano de atividades 2016. EAPN Portugal: Núcleo Distrital de Évora.
6. EAPN Portugal (2016e). Plano de atividades 2016. EAPN Portugal: Núcleo Distrital de Guarda.
7. EAPN Portugal (2016f). Plano de atividades 2016. EAPN Portugal: Núcleo Distrital de Portalegre.
8. EAPN Portugal (2018a). Relatório Anual. EAPN Portugal.
9. EAPN Portugal. (2018b). Pobreza e Exclusão Social em Portugal – 2016-2017 (EU-SILC 2017). ONLCP.
10. Ferreira, F., Jolliffe, D., Prydz, E. (2015). The international poverty line has just been raised to $1.90 a day, but global poverty is basically unchanged. How is that even possible?. Available in: https://blogs.worldbank.org/developmenttalk/international-poverty-line-has-just-been-raised-190-day-global-poverty-basically-unchanged-how-even. Accessed on: 8/10/2018.
11. Instituto Nacional de Estatística (2018). Rendimento e Condições de Vida 2018. Destaque. Serviço de Comunicação e Imagem.
12. Jessoula, M. (2015). Europe 2020 and the Fight against Poverty – Beyond Competence Clash, Towards 'Hybrid' Governance Solutions? Social Policy & Administration. vol. 49, no. 4, 490–511.
13. Leite, A., Leite, E., Ribeiro, H., Alves, A., Silva, A. (2021). The economic consequences of the crisis and its social effects on minorities: the case of the EAPN strategy in Portugal. 71st International Scientific Conference on Economic and Social Development Proceedings, Varazdin, Croatia: Varazdin Development and Entrepreneurship Agency: 60-65.
14. Lopes, A. (2015). "Pobres que envelhecem ou velhos que empobrecem?" – Alguns apontamentos sobre o tema da pobreza na população idosa in Pobreza e Exclusão Social em Portugal – Contextos, Transformações e Estudos.
15. Loureiro, J. C. (2010). Adeus ao Estado Social? A Segurança Social entre o Crocodilo da Economia e a Medusa dos «Direitos Adquiridos». Coimbra Editora Coimbra, Portugal.

16. Madanipour, A. (2011). Social exclusion and space. Em: LeGates and Stout (eds.) City Reader, 5th ed. London, UK: Routledge, 186–194.
17. Pęciak, R., Tusińska, M. (2015). "The fight against poverty in the European Union – expectations versus reality", Journal of International Studies, Vol. 8, No. 2, 114-129.
18. Pizam, A. (1994). Planning a Tourism Research Investigation. In: Ritchie, J. R. and Goeldner, C. R. (eds.). Travel, Tourism, and Hospitality Research: A Handbook for Managers and Researchers. Chichester, John Wiley & Sons, 91-104.
19. Rodrigues, C. F., Figueiras, R., Junqueira, V. (2016). Desigualdade do Rendimento e Pobreza em Portugal – As consequências sociais do programa de ajustamento. Fundação Francisco Manuel dos Santos, Lisbon, Portugal.
20. Sarmento, M., Fernandes, N., Trevisan, G. (2015). A redefinição das condições estruturais da infância e a crise económica em Portugal in Pobreza e Exclusão Social em Portugal – Contextos, Transformações e Estudos.

SOCIAL ASSISTANT MANAGER ROLE IN CONFLICT MANAGEMENT - CASE STUDY IN A HOME SUPPORT SERVICE OF AN IPSS

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ABSTRACT

Third sector organizations have particularities regarding to service provided and to sources of financial resources, which imply adoption of a leadership that promotes dialogue, participation, sharing of responsibilities, even in conflict situations. In order to analyze social skills of social worker in people management, a case study was carried out in a Home Support Service of an IPSS, aiming to understand which leadership style and conflict management strategies are adopted by the coordinator and what is the influence of their competences on these choices. In a first phase, a qualitative methodology was adopted, using a questionnaire survey, which included the Multifactorial Leadership Questionnaire (MLQ) and the Rahim II Organizational Conflict Inventory (ROCI-II), completed by 14 members of its team. In a second phase, a structured interview was carried out with coordinator for an introspective analysis. It concluded that coordinator uses a combination of transformational and transactional leadership and privileges the collaborative strategy, despite using others when circumstances is require. Regarding social skills that fit into leadership styles and conflict management strategies are used the most, the promotion of participation and team spirit and the environment of trust that it generates.

Keywords: *Leadership styles, conflict management strategies, social skills, social management, social worker*

1. INTRODUCTION

A large portion of Third Sector organizations is represented by IPSS, which have assumed the responsibility to act and respond to the needs of individuals and families, whether in terms of education and training, whether in health areas, reception, social support, among many others. As they are institutions of proximity to communities in which they are inserted, they are also the response to social emergencies and support in situations of vulnerability (Semedo, 2015). The great challenge of IPSS is to guarantee the basic management functions (planning, organization, control, motivation and communication), while maintaining the level of financial, political and social sustainability (Tenório, 2005). If, on the one hand, the organization must ensure sustainable management, on the other hand, it must take into account the difficulty of generating its own resources, as the beneficiaries of its services rarely have financial capacity to pay for them (Pereira, Moraes, Júnior & Palmisano, 2013). The need for social worker managers to assume various roles within the institution means that they have the ability to manage the available resources, respond to the needs of those who use the institution and maintain the spirit of employees commitment and motivation (Ferrão, 2016).

Therefore, when the social assistant manager does not have technical, management and leadership skills, this can compromise the quality, effectiveness and efficiency of work carried out by IPSS. As a leader of a team, he must have the ability to manage conflicts using one of the principles of social worker practice, mediation, making use of your skills (listening, communication, availability, empathy, negotiation, argumentation, among others) and procedures of Social Service (Almeida, 2013). In fact, one of the biggest challenges faced by organizational leaders is their ability to manage conflicts while maintaining employee satisfaction and motivation (Figueiredo, 2012). According to Ury, Brett and Goldberg (2009), when there are continuous relationships between people with different interests, conflicts become inevitable, with consequences that can be negative and compromise the environment and performance of employees, or positive, when they become factors of growth, change, development of new solutions and achieving harmony. As in other areas that deal with situations of human weakness, such as nursing, there are several causes of conflict between employees of Third Sector institutions, such as: lack of information and communication, organizational structure, lack of human resources and materials, task differentiation, turnover, lack of confidence, stressful situations caused by employees' daily tasks (Kaitelidou et al., 2012). For this reason, it is important that leader/manager develop skills to resolve or mediate the conflict, minimizing the negative consequences and managing to obtain maximum benefits. As conflict is inevitable, knowing how to manage it is one of the great challenges for leaders who must adapt their leadership style and conflict management strategy to organizational objectives, but also to their mission and values. The social assistant manager has a set of social skills that can facilitate the adaptation of leadership style and, consequently, conflict management strategy. On the other hand, the fact of having to assume management tasks can affect their performance when conflicts occur, which is the question that we intended to clarify in this investigation. Considering social skills of the social worker, the objective of this study was to understand which leadership style and conflict management strategies are adopted by a manager trained in Social Work, according to the employees perception. More specifically, it was intended to characterize the style of leadership adopted by the coordinator of the valence; determine how his leadership is perceived by employees; realize to what extent leadership affects the extra effort, effectiveness and satisfaction with the employees' leadership; analyze the conflict management strategies adopted by the coordinator; assess the influence of social skills in the choice of conflict management strategies. Therefore, this investigation becomes relevant for Social Work, as it allows analyzing whether the social worker's skills are an advantage in conflict management when he has the role of manager and leader of a organization. It is hoped that this investigation can be used as a basis for broader studies and allow expanding the field of Social Work study.

2. LITERATURE REVIEW

Leadership is essential in all departments of an organization, so it is important for the administrator to know human nature and know how to lead, in order to influence and motivate behaviors and attitudes of organization's members, in order to develop efforts to achieve organizational goals (Pinto, Rodrigues, Rodrigues, Moreira & Melo, 2006). In other words, it is a way to a non-coercive influence and motivate in order to coordinate team members to achieve pre-established goals (Cunha, Rego, Cunha & Cabral-Cardoso, 2014). Therefore, a leader must prevent discrimination and encourage positive moods, which creates a positive public image of the organization, promotes the integration of the less motivated into the common project and creates conditions for innovation (Cunha et al., 2014). One way to keep motivational levels constant is to highlight the best of each employee, inspire them and convince them that they are capable of overcoming adversity, keeping focus on the contribution of each one to achieve group's goals (Mendes, 2011).

For this, it is important that leader is sensitive to know their employees individually in order to enable this differentiation and transform motivations into actions (Vergara, 2012). Although there are different approaches and definitions, we can observe four key points: the group, the influence, the motivation and goals to be achieved. It appears, therefore, that group suffers interpersonal influences and specific forms of communication, in the sense of feeling predisposed to obtain certain results (Reis, 2018). Being a leader a change agent, as it influences the activities of individuals and groups, it must have skills that enable it to transform knowledge into action, a great dynamic and capacity for innovation, in order to ensure high performance, but also a social skill that promotes the committed relationship and motivation of its employees. As such, a good leader involves employees in making decisions that affect them, motivating them to meet goals and increasing their productivity (Reis, 2018). In this way, leader assumes a set of important characteristics for the performance of his team, such as: knowing how to organize the team; analyze and plan the tasks to be developed, transmitting them clearly; motivate employees to action; track individual performance and reward efficiency; focus on predetermined goals; inspire confidence and respect for the team and other members of the organization; have relationship skills; take responsibility for failures and having the ability to manage conflicts (Reis, 2018).

2.1. Leadership styles

Leader must have a set of characteristics that promote motivation and involvement of employees, organizational skills, relational skills and respect for their team and ability to manage conflicts, without losing focus on organizational goals. In this sense, your leadership style should promote participation of your team in the planning of tasks and in the discussion of ideas, based on respect, a spirit of mutual help and communication (Reis, 2018). Leadership styles are related to the leader's behavior in the performance of their functions and the impact they have on the organizational environment (Chiavenato, 2004) as it affects the behavior of employees, team functioning and the organization's performance (Hogan & Kaiser, 2005). As such, each style of leadership depends not only on the leader's objectives and the resources available to direct, motivate, plan and organize his employees, but also on the leader's personality, experience, and position in relation to the followers (Reis, 2018). For the present investigation, three leadership styles were studied, transformational, transactional and laissez-faire. Transformational leader shares same goals as employees, which promotes motivation and shared leadership. He has a high level of communication skills and often delegates responsibilities to teams, subsequently consulting team members when he needs to clarify some detail (Reis, 2008). He has charisma, which promotes positive emotions, pride in working together, trust and identification of employees; he is inspiring, give optimism and challenging them; promotes intellectual stimulation, fostering creative thinking and problem solving; and, it considers each employee individually, meeting their needs, supporting them and encouraging them to develop their potential (Cunha et al., 2014). These characteristics give confidence to employees, who feel committed to their leadership, and willing to add value to the company (Reis, 2018). It tries not only to recognize and satisfy needs of its employees, but also to provide a favorable environment that promotes the maximization and development of their individual potential, creating opportunities and induce an organizational culture to support individual development (Gumusluoglu & Ilsev, 2009). The transactional leader establishes an exchange relationship with employees, in which the former remunerates in exchange for their effort and obedience, being able to give rewards to increase productivity, or warn if goals are not met (Reis, 2018). The leader clearly communicates their expectations and what employees must do to be rewarded (contingent reward) and can adopt active exception management, when monitoring performance and adopting preventive actions if established standards are not met, or passive, when waiting for problems to occur before taking corrective actions (Cunha, et al.,

2014). In this style of leadership, employees are not free to innovate, apply new knowledge and skills and be creative, which affects their motivation (Reis, 2018). On the other hand, laissez-faire leader, also called liberal leader, gives total freedom in decision making and in the way to distribute and carry out tasks. This leader is passive, only gives an opinion when requested, which can compromise team's performance if it is not cohesive, as some members may feel lost without superior guidance, others can generate conflicts between individual and team goals and still others can isolate themselves instead of working as a team, losing all inherent advantages (Chiavenato, 2004; Reis, 2018). Likewise, the passivity of leader does not encourage communication, nor does it motivate the introduction of innovations, nor the assessment of external environment, which can compromise the organization's competitive capacity (Reis, 2018). They wait for problems to occur to take corrective actions (management by passive exception), they refrain from getting involved in critical moments and, therefore, and because of their passive attitude, they have no capacity to influence their employees (Cunha et al., 2014). Additionally, when group does not have a good organizational capacity, the workload tends to accumulate, which reduces productivity, because tasks do not follow a pre-defined plan and a lot of time is wasted in discussing procedures (Chiavenato, 2004).

2.2. Conflict and management strategies

Conflict is a process that starts when one of the parts believes that they are being negatively influenced by the other, or when there have different opinions (Figueiredo, 2012). Chiavenato (2004) states that conflict arises when there are antagonistic ideas, feelings, attitudes or interests, which collide in order to add value to organizations, or on the contrary, bringing costs to the organization. According to Cunha et al. (2014), conflict can be divided into three components: interaction, interdependence and incompatibility perception. A conflict manifests itself when two or more actors interact with each other. In turn, the conflicting parts depend on each other to carry out their interests and goals in such a way that they conflict with the interests and goals of the other part. However, a conflict only arises when one of the parts perceives this divergence of interests and objectives and intends to dispute them. Overall, Çinar and Kaban (2012) report that organizational conflict arises from a set of factors, such as: differences between individuals, poorly designed organizational structure, poor communication, high level of uncertainty, size of the organization, differences in methods of management, among others. However, although conflict has a negative connotation within organizations, mainly due to communication failures, competition of personal interests, interdependencies at work and differences in organization members perception, currently this phenomenon can also be a promoter of self-criticism, creativity and the propensity to accept change (Beck, 2009; Reis, 2018). Thus, conflicts are inherent to organizations, drive innovation and creativity, so healthy conflict is an indicator of effective and efficient management, as well as a source of development for groups and work teams (Figueiredo, 2012). But level of conflict must be moderated, as excess causes difficulties in cooperation and coordination, stress, chaos and a destructive climate, while a low level of conflict creates apathy, lack of commitment and disincentive, stagnation and inability to face challenges. Only moderation promotes creativity and innovation, as well as improving quality of decisions and performance (Cunha et al., 2014). The consequences of conflicts can be functional, when they are constructive, motivate to improve performance, stimulate change and innovation and improve quality of decisions, or dysfunctional, when they attenuate the effectiveness of groups, cause communication deficiencies, emotional exhaustion, frustration, hostility and stress reduce group cohesion and goals achievement (Reis, 2018). After verifying the existence of conflicts, it is important to know how to negotiate the agreement between the parts involved, satisfy the objectives and/or eliminate causes that led to the conflict. Thus, conflict management implies the definition and implementation of individual and collective strategies that motivate collaborative behaviors

(Reis, 2018) satisfying the objectives and/or eliminating the causes that led to the conflict. There are several models of conflict management strategies (Robbins, 2010, cited by Reis, 2018, Thomas and Kilmann, cited by Berg, 2012, among others), however this article focused on Rahim and Bonoma's Two-Dimensional Five-Styles Model (1979) and later characterized by Rahim, Magner and Shapiro (2000). Rahim and Bonoma (1979) developed a two-dimensional model of different styles of conflict management, distinguishing the concern to satisfy one's own interests (low or high) from the interests of the other part (low or high), according to the degree of motivation (high or low) to achieve your goals and those of the other part. Thus, five styles emerged:

- Integration/Collaboration – high self-interest and high interest in others. Collaboration between stakeholders, exchanging information, identifying causes of conflict and reaching a solution that meets everyone's needs. Indicated for complex problems and when there is enough time to discuss solutions, as it allows for communication and debate between parts;
- Compliance/Accommodation – low self-interest and high interest in others. Altruism of one part to satisfy the interest of the other, not taking into account the differences of the other parts. It is suitable for when the issue is much more relevant to one of the parts, or when one part does not feel it is guaranteed to be right and the other is;
- Domination – high self-interest and low interest in others. Competition, with arguments that support the individual position, with a view to achieving only their own interests, ignoring the needs and expectations of other parts, which marks an individualistic style. It may be an appropriate style when a quick decision is needed, the issue is easy to resolve, the other part does not have the necessary knowledge, or when the solution is excessively unfavorable to one of the parts;
- Avoidance – low self-interest and low interest in others. Escape from the problem in order to stop the escalation of the conflict, being a temporary solution, to postpone the solution of the problem. Indicated when the benefits of a confrontation are less than the consequences and when there is a lack of information to make decisions;
- Commitment – intermediate interest in self and in others. Granting of the parts so that the decision is acceptable to all, where it is sought to give in some points to gain an advantage in others. Indicated for simpler issues, when there is an impasse in decision making.

Comparing different strategies, there is no one better than other to manage conflicts, so it is important to analyze the situation, the issue to be resolved and the parts involved, in order to better adapt the strategy (Berg, 2012; Rahim, 2002). It is up to the manager and leader to know how and when to use each of the tools, according to the objectives they intend to achieve, as recognizing and dealing with conflict properly can make the difference between success and development and failure and setback (Burbridge & Burbridge, 2012; Alves & Moreschi, 2006). In this way, the leader's role is to position himself democratically as a regulating agent of conflict, transforming competition into a healthy stimulus among employees, integrating differences in order to make them sources of enrichment and promoting useful disagreements that contribute to evolution ideas, so that the team remains cohesive and motivated to achieve organizational goals (Figueiredo, 2012).

3. METHODOLOGY

Methodology used was the data triangulation between bibliographic research, questionnaire surveys to employees and structured interview with the institution's SAD coordinator. To define the leadership style, the Multifactorial Leadership Questionnaire (MLQ) was used, which divides the styles into transactional, transformational and laissez-faire, and to analyze the most relevant conflict management strategies, the Rahim Organizational Conflict Inventory II – ROCI-II, which distinguishes five forms: collaboration, accommodation, domination,

avoidance and commitment. In order to assess the coordinator's perception of these two issues, a structured interview was carried out, in order to have a more in-depth view of their characteristics. This investigation took the form of a case study, in a Private Institution of Social Solidarity (IPSS) in Lisbon region, the Vale da Amoreira Retired and Elderly Center (CRIVA), which provides social services to elderly population, assuming an exploratory nature. The questionnaire survey consisted of three questionnaires. The first part corresponds to sociodemographic questionnaire, which allowed us to characterize sample. The second part was reserved for the Multifactorial Leadership Questionnaire (MLQ), developed by Bernard Bass and Bruce Avolio and translated and adapted by Oliveira (2007, cited by Matos, 2012). Finally, the third part presents the Rahim Organizational Conflict Inventory II – ROCI-II, created by Afzalur Rahim based on the Two-Dimensional Model of Five Styles and validated for Portuguese by Moreira (2003, cited by Frank, 2008). The MLQ is composed of 12 subscales, distributed over four scales – transformational leadership, transactional leadership, laissez-faire leadership, and leadership results – according to the following table (Table 1).

	Scale	**Subscale**	**Items**
Leadership styles	Transformational leadership	Idealized Influence (Attributes)	10, 18, 21, 25
		Idealized Influence (Behaviours)	6, 14, 23, 34
		Inspirational motivation	9, 13, 26, 36
		Intellectual stimulation	2, 8, 30, 32
		Individualized consideration	15, 19, 29, 31
	Transactional leadership	Contingency reward	1, 11, 16, 35
		Management by exception (active)	4, 22, 24, 27
	Laissez-faire leadership	Management by exception (passive)	3, 12, 17, 20
		Laissez-faire	5, 7, 28, 33
Leadership results		Extra effort	39, 42, 44
		Effectiveness	37, 40, 43, 45
		Satisfaction	38, 41

Table 1: MLQ Groups and Scales
(Source: Matos, 2012)

To obtain the results, the average is calculated for each scale, with the highest values of each corresponding to the behavior most frequently observed in the leader. In turn, the ROCI-II intends to assess the conflict management styles adopted in the organizational environment, which can be applied to any work context. In its original form, the ROCI-II consists of three parts: A (relationship with superiors), B (relationship between colleagues) and C (relationship of superiors with collaborators). The parts format is identical, changing only the vocabulary according to the version for which it is intended. The questionnaire consists of 28 items, and was adapted in order to assess the perception that employees have of the way the social worker manager deals with conflict situations (Part C). The questions are divided into five scales based on the conceptualization of five styles of interpersonal conflict management described by authors: 1) Collaboration (7 items); 2) Accommodation (6 items); 3) Avoidance (6 items); 4) Domination (5 items); 5) Commitment (4 items). Its distribution is described in Table 2.

Scale	Items
Collaboration	1, 4, 5, 12, 22, 23, 28
Accommodation	2, 10, 11, 13, 19, 24
Avoidance	3, 6, 16, 17, 26, 27
Domination	8, 9, 18, 21, 25
Commitment	7, 14, 15, 20

Table 2: ROCI-II Scales
(Source: Franque, 2008)

The results are obtained from the analysis of absolute and relative frequencies, as well as the averages of Likert scale that will show the trend in each of the scales. For both questionnaires, a five-point Likert scale was used, where 1 corresponds to "I completely disagree", 2 to "Partially disagree", 3 to "Indifferent", 4 to "Partially agree" and 5 to "Completely agree". The interview, which was conducted with the SAD coordinator social worker, took the form of a structured interview, as Marconi and Lakatos (2003) refer, in this type of interview, the script is rigid, follows a sequence of questions, which is appropriate for the conditions in which the interview was conducted, with the script sent by e-mail to the institution's director for further written response.
Qualitative analysis was performed using Bardin's (2009) content analysis technique, in order to discover the meaning closest to the reality of the observed content. For this analysis, elements of the coordinator's interviews were coded and grouped into six categories:

1) Relationship and characterization of employees – the coordinator's perception of his relationship with employees and how he characterizes them;
2) Characterization of leadership – perception of how their leadership is characterized by employees, as well as self-characterized;
3) Leadership strategies – includes discussion with employees about the definition of the organization's strategy, how it manages communication, how it motivates employees and how it acts when faced with performance problems;
4) Causes of conflict – main causes identification;
5) Conflict management strategies - includes the identification of the main conflict management strategies, the efficiency of communication reception, the promotion of cooperation after conflict, their role in a conflict, if employees overlap their solutions and if there is openness to discussing problems;
6) Training and skills in conflict management: characterization of training to deal with conflicts and identification of their social skills to manage conflicts.

After attach categories, subcategories were defined, also called registration units, which support the framework of meaning to be codified, and context units were filled with text fragments that contextualize the registration unit (Bardin, 2009).

4. MAIN RESULTS

The study sample includes 14 female medical action assistants. About 21.43% (n=3) of the collaborators were between 25/35 years old, 50.0% (n=6) between 36/45 years old and 28.57% (n=4) between 46/55 years old. Most employees are single, with 42.86% (n=6), 35.71% (n=5) are married and 21.43% (n=14) have another marital status.

A clear majority of female employees completed secondary education, around 78.57% (n=11). Only 14.29% (n=2) had a higher education degree and 7.14% (n=1) had completed basic education.

4.1. Leadership styles

In an IPSS, the human factor is what adds value in providing service to users, so it is important that leader of each team has the ability to maintain high levels of satisfaction, motivation and commitment to the institution and its mission and objectives. For this, it is essential that the leader gets to know his collaborators, establish a close relationship and adopt leadership styles that are adequate to organizational needs and objectives. Table 1 summarizes averages of all subscales of MLQ questionnaire and presents the average of each leadership scale and results.

	Scale	Subscale	Average subscale	Average scale
Leadership styles	Transformational leadership	Idealized Influence (Attributes)	3,63	3,66
		Idealized Influence (Behaviours)	3,54	
		Inspirational motivation	3,75	
		Intellectual stimulation	3,77	
		Individualized consideration	3,61	
	Transactional leadership	Contingency reward	3,43	3,43
		Management by exception (active)	3,43	
	Laissez-faire leadership	Management by exception (passive)	2,52	2,40
		Laissez-faire	2,27	
Leadership results		Extra effort	3,40	3,59
		Effectiveness	3,61	
		Satisfaction	3,75	

Table 3: Summary of MLQ results

Analyzing the results presented, there is a balance between transformational and transactional leadership styles, with very similar average values. This result indicates that employees identify behavioral characteristics of leader associated with these two leadership styles, with behaviors related to Laissez-faire leadership being less relevant. It should also be noted that, in the Transformational Leadership scale, employees point to “inspirational motivation” and “intellectual stimulation” as the most frequent behaviors. The first demonstrates that leader tries to frame and combine the organization's objectives with employee satisfaction, fostering team spirit and motivating them to achieve them. It also shows that employees identify with values and objectives defended by leader and that leader is able to clearly convey them. Regarding the second, it shows that leader stimulates creativity of his employees. As for the Transactional Leadership scale, the two behaviors showed the same weight, which shows that leader, on the one hand, establishes a reward for the goals achieved and, on the other hand, adopts a penalizing attitude when his team does not meet these goals.

According to Bass and Avolio (2004), transactional leadership works as a platform from which transformational leadership develops, whereby the most effective leaders are those who adopt behaviors characteristic of both styles. The authors also state that, despite the fact that transformational leadership often stands out in more dynamic organizations, the difference for transactional leadership is never very evident. The interview with coordinator also gives us some clues about this combination of leadership styles. On the one hand, it promotes the participation of its team members in matters relating to the definition of the organization's strategies and establishes a close relationship in order to understand what motivates each employee, referring to characteristics of a transformational leadership style. On the other hand, when he detects performance problems, the coordinator is divided between supporting and penalizing employee, after trying to understand what led him to not correctly fulfill tasks and the penalty indicates a transactional leadership style. This combination of leadership styles is also defended by Matos (2012), who states that leader exclusively adopts a leadership style. Despite showing more or less characteristics of one or the other style, in certain situations, the leader adopts the style that best suits the reality he faces. Graça's (2016) investigation of six IPSS in Santarém district also revealed that leadership styles of technical directors and chairpersons perceived by their followers were transformational, followed by transactional, which indicates that leaders adopt the style best suited to each situation and each employee. It was also shown that the transformational style has more impact on job satisfaction, although both styles complement each other. The MLQ results also allow us to analyze the leader's social skills. Combining the results of frequencies and averages of the items of each scale, characteristics such as altruism ("It goes beyond the personal interest for the good of the group", L18), admiration ("It's a pride to be by his side", L10), commitment ("Shows importance of having a strong sense of obligation", L14), ethical and moral standards ("Considers the ethical and moral consequences of your decisions", L23), creativity and innovation (Looks for different alternatives to solve problems", L8), individualization ("Treat others as people rather than just a group member", L19), constant challenge ("Help others develop their strengths", L31), reward/reward performance ("Makes clear what each one can expect and receive when performance goals are reached", L16), expression of satisfaction ("Express satisfaction when others meet expectations", L35) and valuing failures to correct and achieve goals ("Directs their attention to failures and how to achieve the expected standards", L27). These skills indicate an association with leadership styles, since an altruistic leader, committed to organization, with high ethical and moral standards, creative and who seeks to solve problems in an innovative way, which individualizes each employee and promotes its development and growth is governed by transformational leadership. Likewise, a leader who rewards performance, who focuses on objectives and shows satisfaction when they are achieved and who values failures, correcting them as soon as he detects them, has characteristics of a transactional leadership. Regarding results of leadership, it appears that behaviors associated with transformational and transactional leadership styles, as they are the most representative, more significantly reinforce Satisfaction and Effectiveness, even though the Extra Effort presents values close to the former. Satisfaction indicates that employees feel satisfied and understand the leader's attitude as appropriate, making the organizational environment productive. Effectiveness shows that leader faces interests of each employee and the group as a whole, which gives them the ability to represent the team at higher hierarchical levels. Although less significant, Extra Effort denotes that employees do more than expected. Matos (2012) also obtained less significant leadership results in the company that had a transformational style. According to the author, leadership styles have a distinct influence on organizational performance, if, on the one hand, transactional leadership gets extra effort and greater satisfaction from employees, transformational leadership can affect the company's profitability and growth, as the positive effects of satisfaction and performance come only from intrinsic motivation.

Taking into account the present study, it is common knowledge that medical assistants enjoy low monthly remuneration and working conditions do not always contribute to the motivation, performance and commitment of employees, so that the leader is able to obtain better results, his leadership results should implement compensation and motivation mechanisms (not necessarily monetary).

4.2. Conflict and management strategies

Conflict is common in all organizations, so employees of institutions whose mission is to care for the most vulnerable people are no exception. Because they face diverse and delicate problems, and often highly serious, they can generate difficulties in dealing emotionally with them, which can lead to interpersonal conflicts. According to coordinator and leader of the SAD team, the most common causes of conflicts are “personality conflicts between workers”. The results of employees' perception revealed that, in a situation of conflict, the social worker manager predominantly adopts the Collaboration style (M=4.36), followed by the Accommodation style (M=3.98), Commitment (M=3, 84), Avoidance (M=3.7) and, finally, Domination (M=2.64). What this result shows is that the coordinator does not adopt a uniform strategy, but the one he considers most appropriate for each conflict, taking care to preferentially use collaborative strategies and avoid those of domination. This result would be expected due to the educational characteristics of the social worker, who promotes team spirit and participatory discussion (collaborative style), has a high degree of altruism and charity (accommodative style) and seeks commitment and group unity for the common good (commitment). On the other hand, domination was the least frequent strategy, having probably been used to safeguard the institution's greater interest to the detriment of the interests of one or another employee. As mentioned by Rahim (2002), the Collaboration strategy involves the availability and openness of the parts involved to look for alternatives to resolve the conflict, in order to be beneficial to all. This fact shows the importance of preferentially adopting this strategy in Third Sector organizations, as the objective is to resolve the conflict, maintaining the motivation and performance of employees, knowing that resources are usually scarce and their tasks involve ensuring care of more fragile people. Reinforces Ury et al. (2009, p.47) that "the conciliation of the interests of the parts tends to produce a higher level of satisfaction with the results, improves their relationship, reduces the likelihood of conflict recurrence and, eventually, its costs." Although it should be the most beneficial option for most conflict situations that occur in the organization, this conciliation of interests cannot question its mission and objectives, being the manager/leader's responsibility to defend them in case of confrontation of interests. There are several studies with professionals who take care of the most vulnerable and who present the collaborative strategy as preferred in conflict management. For example, in the study by Franque (2008), whose sample consisted of nurses from the hospital and the health center, there is a predominance of the collaborative style, with the dominance strategy being the least adopted by the heads, especially in women, which coincides with results obtained in present investigation. The author also states that organizational culture influences the choice of conflict management strategies. Thus, coordinator chooses to interfere only when the conflict has an impact on the institution, on tasks and on its performance, addressing the generating issues in team meetings and motivating them to participate in a sincere and direct way. However, the fact of “seeking to create moments of dialogue” between employees when he perceives quarrels shows that, at times, he chooses a collaborative approach, of participatory discussion. Regarding the social skills that allows to choose the most appropriate strategies for conflict management, combining the most relevant frequencies and averages, the following characteristics are identified: joint search for solutions ("The manager seeks to analyze with the employees the solutions for the problems that benefit both", C5), honesty and trust ("In the face of a problematic situation with an employee, the information that

the manager exchanges is always true", C12), collaboration ("The manager collaborates with the employees to reach acceptable solutions for both", C23), satisfaction of employees' needs and expectations ("At work, the manager tries to meet the employees' expectations", C24; "In the face of a work problem, the manager usually tries to meet the employees' needs", C2), avoidance of annoying situations ("The manager tries to avoid annoying and unpleasant situations with employees", C27) and diplomacy ("Facing work problems, the manager tries to reach agreements with the collaborators", C15). The coordinator also highlighted his ability to "put himself in other's shoes", trying to "understand what may have led to the conflict" and adjusting "ways of dealing with the person". This empathy and ability to adjust their behavior to the characteristics of each employee are very important social skills to manage conflicts in a collaborative way, assuming that this strategy is the most adequate to guarantee the motivation and performance of the team in Third Sector organizations. However, the coordinator recognizes that his way of communicating is not always efficient, which can compromise message transmission and his strategy. According to Robbins (2008), poor communication is one of the main sources of interpersonal conflicts in organizations, being also one of the biggest inhibitors of good performance. In addition to inefficient communication, what is often verified is communication only down the hierarchy, as mentioned by the coordinator, when he says that the main communication occurs "in the weekly meetings", where he goes "up-to-date with the institution's situations, of the service, of the customers". In practice, it is employees who have greater knowledge of work and inherent problems they deal with on a day-to-day basis, so efficient communication should be both ways, so that the employees' point of view can also be valued, improving the quality of the service provided. Analyzing relationship between leadership styles adopted by coordinator and main strategies he uses to manage conflicts, it appears that the search for solutions with the participation of everyone, honesty and trust and the promotion of team spirit through collaboration among all, characteristics present in the collaborative strategy – the most frequently adopted by the coordinator – are also common to the characteristics of a transformational leadership. However, a relationship between the characteristics of transactional leadership and accommodative or commitment strategies is not detected. It is also important to mention the issue of training in conflict management, as coordinator makes use of "some techniques used to mediate conflicts with users that can be adapted in the context of people coordination". However, taking into account their recognized difficulty in communication and avoidance approach, perhaps additional training could strengthen their ability to manage conflicts more appropriately for each situation, contributing to increase the performance and motivation of their team members.

5. CONCLUSION

Third Sector organizations have played a very important role with most vulnerable citizens, through the provision of services and activities that promote well-being and quality of life. Due to its importance, employees must feel motivated, committed and satisfied, so the role of leader is essential to ensure that tasks performance is as well as possible. This case study aimed to analyze leadership styles and conflict management strategies adopted by the CRIVA SAD coordinator, as well as their associated social skills, contributing to increase knowledge on these themes. To analyze leadership styles adopted by coordinator, the MLQ questionnaire was applied to employees, resulting in a combination of transformational and transactional styles, with a slight tendency towards the former. In his interview, the coordinator also shows that he uses both styles, promoting the participation of his team members in issues related to the definition of the organization's strategies and establishing a close relationship in order to understand what motivates each employee (transformational leadership), but also penalizing when it detects failures (transactional leadership).

In terms of social skills associated with leadership, the results characterize the coordinator and leader as altruistic, committed to the organization, with high ethical and moral standards, creative and seeking to solve problems in an innovative way, which individualizes each employee and promotes its development and growth, which leads to a transformational leadership. But the coordinator also rewards performance, focuses on objectives and shows satisfaction when they are achieved and values failures, correcting them as soon as he detects them, so he has characteristics of a transactional leadership. Taking into account the skills described above and which were the most frequently identified by employees, it can be said that these influence leadership style adopted by coordinator. As in any other organization, conflict usually occurs due to different perspectives that individuals have on issues that take place in their daily professional lives. As seen above, conflict can even be beneficial for members of the organization and for the success of organization itself. However, this benefit can be influenced by how leader approaches conflicts. The application of the ROCI-II in this case study, which aimed to analyze the strategies adopted by the SAD coordinator, showed that most used strategy was collaborative, followed by accommodative and commitment, which shows that it promotes team spirit and participatory discussion, has a high degree of altruism and charity and seeks the commitment and unity of the group for the common good. On the other hand, domination is the least used by the manager, being probably adopted when values of the institution and the performance of the group could be called into question. Although employees make this assessment of how leader manages conflicts, saying that he prefers to avoid conflicts whenever possible, referring to the Avoidance strategy, even though they are aware that some problems are only resolved when occurs a conflict. Without additional data, it can be assumed that will adopt this style when prefer to delay problems related to shifts, lack of equipment and low wages, for example. Regarding social skills associated with conflict management strategies, the results of questionnaire indicate that coordinator seeks solutions together, transmits honesty and trust, collaborates with team to solve problems, referring to the collaborative strategy, but also meets the needs and employees' expectations, showing accommodation characteristics, avoids annoying situations according to avoidance and is a diplomat, as defended by the cooperative strategy. However, lack of a fundamental characteristic to manage conflicts was detected, communication, which he considered inefficient and which needed to be improved. As can be seen, although coordinator favors the collaborative style, he makes use of others, acting according to circumstances. Thus, it can be said that their social skills influence conflict management strategies, as they identify more with the strategy they use most frequently, not identifying any competence associated with the domination strategy, which fits in with the overall results. Finally, an attempt was made to establish a relationship between leadership styles and conflict management strategies adopted. Despite being able to relate some common skills between transformational leadership and collaborative strategy – promoting participation and team spirit, trust – it was not possible to establish this association with transactional leadership. However, due to the importance of the social manager, but also the coordinators of the valences, who lead with each of the teams, it is necessary that they become mobilizing agents and influencers of team spirit, performance, motivation and commitment to the institution and users. For this, it is essential that they have training in the areas of communication, leadership and conflict management. Training promotes the development of skills that allow motivation and sensitivity to meet employees expectations, as well as more efficient communication, inhibiting one of the most common sources of conflict, in addition to allowing this to be resolved constructively and felt as beneficial for all stakeholders.

LITERATURE:

1. Almeida, H.N. (2013). Gestão de caso e mediação social: abordagens processos e competências cruzadas na agenda do conhecimento em serviço social. In C.C. Santos, C.P. Albuquerque e H.N. Almeida (Org.). *Serviço Social: Mutações e Desafios*. (Cap. 1, pp. 15-63). Coimbra: Coimbra University Press.
2. Alves, F.C. & Moreschi, R.C. (2006). *Montando o quebra-cabeça: a importância da administração do conflito no ambiente de trabalho*. Ciência & Opinião, 13(1).
3. Bardin, L. (2009). *Análise de Conteúdo*. Lisboa: Edições 70.
4. Bass, B.M., & Avolio, B. (2004). *MLQ Multifactor Leadership Questionnaire*. (2ªEd.). California: Mind Garden.
5. Beck, G. (2009). *Conflito nas Organizações*. Novo Hamburgo: Centro Universitário Feevale.
6. Berg, E.A. (2012). *Administração de conflitos: abordagem práticas para o dia a dia*. (1ª Ed.). Curitiba: Juruá.
7. Burbridge, R.M. & Burbridge, A. (2012). *Gestão de conflitos: desafios do mundo corporativo*. São Paulo: Saraiva.
8. Chiavenato, I. (2004). *Introdução à teoria geral da administração* (7.ª ed.). Rio de Janeiro: Elsevier.
9. Çinar, F. & Kaban, A. (2012). Conflict Management and Visionary Leadership: AnApplication in Hospital Organizations. *Procedia – Social and Behavioral Sciences*, 58, 197-206.
10. Cunha, M.P., Rego, A., Campos e Cunha, R., & Cabral-Cardoso (2014). *Manual de comportamento organizacional e gestão* (7.ª ed.). Lisboa: Editora RH.
11. Ferrão, V.F. (2016). *Assistente Soial e Diretor Técnico: Complementaridade ou Dualidade de funções no serviço de apoio domiciliário*. Dissertação apresentada à Faculdade de Psicologia e Ciências da Educação da Universidade de Coimbra, para a obtenção do grau de mestre, Coimbra.
12. Figueiredo, L.J. (2012). *A Gestão de Conflitos numa Organização e consequente Satisfação dos Colaboradores*. Dissertação apresentada ao Departamento de Economia, Gestão e Ciências Sociais da Universidade Católica Portuguesa (Centro Regional das Beiras – Pólo de Viseu), para a obtenção do grau de mestre, Viseu.
13. Franque, P.F. (2006). *Análise dos Estilos de Gestão de Conflitos predominantes em ambiente laboral dos enfermeiros da Ilha de S. Miguel*. Dissertação apresentada à Universidade dos Açores para a obtenção do grau de mestre em Gestão Pública, Ponta Delgada.
14. Graça, T.S. (2016). *O impacto dos Estilos de Liderança na Satisfação Profissional: Um estudo sobre IPSS do Distrito de Santarém*. Dissertação apresentada à Escola Superior de Gestão e Tecnologia do Instituto Politécnico de Santarém para a obtenção do grau de mestre em Gestão de Organizações e Economia Social, Santarém.
15. Gumusluoglu, L., & Ilsev, A. (2009). Transformational leadership, creativity, and organizational innovation. *Journal of Business Research*, 62, 461-473.
16. Hogan, R. & Kaiser, R.B. (2005). What we know about leadership. *Review of General Psychology*, 9, 169-180.
17. Kaitelidou, D., Kontogianni, A., Galanis, P., Siskou, O., Mallidou, A., Pavlakis, A., Liaropoulos, L. (2012). Conflict management and job satisfaction in paediatric hospitals in Greece. *Journal of nursing management*, 20(4), 571-578.
18. Marconi, M.A. & Lakatos, E.M. (2003). *Fundamentos de Metodologia Científica*. (5ª Ed.). São Paulo: Atlas.

19. Matos, P.G. (2012). *Estilos de Liderança nas PME e a sua influência no desempenho*. Dissertação apresentada ao Departamento de Ciências Sociais da Universidade da Beira Interior para a obtenção do grau de mestre, Covilhã.
20. Mendes, A. (2011). Motivar em tempos de austeridade. *Revista Human Resource*, 18, 55-56.
21. Pereira, R.S., Moraes, FC., Júnior, A.B. & Palmisano, A. (2013). Especificidades da Gestão no Terceiro Setor. *Organizações em Contexto*, 9(18), 167-195.
22. Pinto, C.A., Rodrigues, J.A., Rodrigues, R.B., Moreira, M.A. & Melo, L.T. (2006). *Fundamentos de Gestão*. Lisboa: Editorial Presença.
23. Rahim, M.A. (2002). Toward a Theory of Managing Organizational Conflict. *International Journal of Conflict Management*, 13, 205-235.
24. Rahim, M.A. & Bonoma, T. (1979). Managing organizational conflict: a model fordiagnosis and intervention. *Psychological Reports*, 44(3), 1323-1344
25. Rahim, M.A., Magner, N.R. & Shapiro, D.L. (2000). Do justice perceptions influence styles of handling conflict with Supervisors? What justice perceptions, precisely? *The International Journal of Conflict Management*,11(1), 9-31.
26. Reis, F.L. (2018a). *Manual de Gestão das Organizações*. Lisboa: Edições Sílabo.
27. Robbins, S.P. (2008). *O segredo na gestão de pessoas*. Lisboa: Centro Atlântico.
28. Semedo, A.M. (2015). *Estilos de Liderança dos Profissionais do Serviço Social em Instituições Particulares de Solidariedade Social*. Dissertação de Mestrado em Serviço Social em Gestão de Unidades Sociais de Bem-Estar, apresentado ao Instituto de Serviço Social da Universidade Lusófona de Humanidades e Tecnologias, sob orientação da Prof. Doutora Maria Irene Lopes B. de Carvalho, Lisboa.
29. Tenório, F.G. (org.) (2005). *Gestão de ONGs: principais funções gerenciais*. (9ª ed.). Rio de Janeiro: Editora FGV.
30. Ury, W., Brett, J., & Goldberg, S. (2009). *Resolução de conflitos*. Lisboa: Actual Editora.
31. Vergara, S.C. (2012). *Gestão de pessoas*. (12ª Ed.). São Paulo: Ed. Atlas.

RESEARCH ON THE IMPACT OF THE DEVELOPMENT AGENCY AND EU FUNDED PROJECTS ON THE ECONOMIC DEVELOPMENT OF THE REGION

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ABSTRACT

EU funds represent a significant source of project funding, which can have a particularly positive impact on the economic and infrastructure development of rural and less developed areas. Organizations in these areas (regardless of whether they are economic entities, non-profit sector organizations or local / regional self-government units) should achieve their competitiveness by implementing growth and development projects. However, they often do not have sufficient internal capacity to prepare and / or implement such projects. Small local self-government units, small budgets, lack of financial resources and insufficient human resources are challenges that force different thinking and different structuring of business. One of the recognized solutions to the aforementioned problem are development agencies, within which there are internal capacities that primarily relate to competent employees who are trained for the preparation and implementation of projects funded by EU funds. By cooperation of aforementioned organizations and development agencies, it is possible to achieve a synergistic effect and significantly increase the possibility of project success and indirectly influence the development of the regions within which the organizations are located. Development Agency TINTL operates in the area of eastern Croatia, which was significantly affected by the Homeland War and the economic crisis, and which, thanks to the establishment of inter-municipal cooperation with the development agency's resources, is becoming an example of efficient use of EU funds. By Croatian accession to the European Union the market has diversified, and business has become dependent on innovation and transition, which many stakeholders seek to finance with EU funds. In this paper, the authors explore the scope of the Development Agency TINTL and, by analysing of the implemented EU projects in which it participated, prove its impact on the economic development of the region (eastern Croatia).

Keywords: *competitiveness, Development Agency TINTL, EU funds, project management, economic development*

1. INTRODUCTION

Upon gaining independence and the ensuing Homeland War, Croatia was faced with numerous challenges, the greatest being economic recovery. The area of Vukovar-Srijem County was one of the areas most affected by the war and was ranked at the very bottom of the list of EU regions by GDP, which is a significant indicator of economic growth. The purpose of this paper is to research to what extent the EU financial instruments have contributed to the development and advancement of the Vukovar-Srijem County area, whether or not they have led to improvement

and advancement of this region in comparison to other regions of the Republic of Croatia. The current treatment of EU regions will also be investigated. The research will include the work of the Development Agency TINTL in the easternmost part of the county, the results they achieved in their work with businesses and will compare investment in the business sector and investment in the public administration and civil sectors. As for the structure of the paper, it is based on a theoretical overview of statistical data as an introduction into research, which is the basis of the conclusion.

2. THEORETICAL OVERVIEW

On July 1, 2013 the Republic of Croatia became the 28th member state of the European Union. After submitting the membership application in 2003 and receiving the candidate country status in 2004 a long term plan for the Republic of Croatia to become a full-fledged member state of the European community was successfully implemented. One of the reasons why this was Croatia's goal was the availability of financial resources of European funds for financing programmes and projects involving general social development with special emphasis being placed on the economy. Before joining the European Union Croatia had access to IPA funds, which were modest yet sufficient to prepare both public administration and the civil sector on the one hand and the entire economy on the other for what was to follow, i.e. access to structural, cohesion and other EU funds. Between 1998 and 2006 the Republic of Croatia invested over EUR 0.6 billion in the reconstruction of houses, flats and the infrastructure, but there were no private and foreign investments that would foster the dynamic economic growth required to catch up with the European average. The accession to the European Union provided the Republic of Croatia with financial resources for the following operational programmes: Operational programme Competitiveness and Cohesion, ESF Operational Programme Efficient Human Resources, Rural Development Programme, Operational Programme for Maritime Affairs and Fisheries. The report on the use of European structural and investment funds (2021) states that in the first half of 2020 projects worth EUR 1.25 billion were negotiated, i.e. 12.21 % of the total of funds negotiated since the beginning of the implementation of operational programmes. End beneficiaries and contractors were paid EUR 677.59 million, i.e. 16.99 % of the total amount paid since the beginning of the implementation. The amount of EUR 309.22 million has been verified, i.e. 9.35 % of the total amount verified since the beginning of the implementation. At the same time The European Commission (EC) remitted an amount of EUR 546.64 million, which represents 13.98 % of the total remittance since the beginning of the programme implementation. The same report (2021) states that on June 30, 2020 a total of EUR 10.24 billion was negotiated, i.e. 95.43 % of the overall allocated funds. A total of EUR 3.99 billion was paid, i.e. 37.17 % of allocated funds. A total of EUR 3.31 billion was verified, i.e. 30.81 % of allocated funds and a total of EUR 3,91 billion was remitted, i.e. 36.44 % of allocated funds, which were EUR 10.73 billion for (operational) programmes in the 2014-2020 financial period. The development strategy of Vukovar-Srijem County for the period until 2020 (Vukovarsko-srijemska županija, 2017) suggests that the area of this county was well developed prior to the Homeland War with a highly productive agriculture and a strong manufacturing industry, whereas 20 years after the peaceful reintegration it ranked low on Croatia's development and competitiveness scale. Municipalities in the east of the Republic of Croatia are extremely underdeveloped and poor with insufficient funds for any substantial economic and social growth and development. This area has also been affected by a huge population decline following the accession of the Republic of Croatia to the EU and is thus facing another problem – shortage of workforce. According to available data for 2008, which was the year preceding the economic crisis, the County's GDP per capita was lower by approximately 40% than the national average, which is why it was ranked next to last in Croatia. For comparison, the region of Panonian Croatia had a 30% lower GDP per capita than the Croatian average,

which means that the County lagged behind the average of the region as well. The County's results were very similar for other development measures as well. The main indicator of poor economic recovery and modest investment in the economy after the war can be illustrated by the fact that the County had only one business zone prior to 2005, the one in Drenovci municipality, after which slightly larger investments followed in this area and currently there are ten zones set up in accordance with the Act on the Development of Infrastructure for Entrepreneurship that are ready to receive investors. According to data obtained from the Croatian Bureau of Statistics for the area of Vukovar-Srijem County in 2014, in the first year following Croatia's accession to the EU, the County had a GDP of EUR 1.02 million (HRK 7,784 million), which was 2.4% of the total GDP in the Republic of Croatia and 3.5% of the total GDP in the statistical region of NUTS 2 level, Continental Croatia. In 2014, GDP per capita was EUR 5,897 (HRK 44,993), which was 58% of the average for the Republic of Croatia, which placed the County in the seventeenth position in Croatia and was 57% of the average for Continental Croatia. It is important to emphasize that in the monitored year the Republic of Croatia had a GDP that represented 58%, and Vukovar-Srijem County had a GDP which was 36% of the average GDP per capita in the European Union. In 2019 Vukovar-Srijem County generated HRK 19.6 billion in economic output, which was an increase of 3.7 % compared to 2018, when businesses generated a total revenue of HRK 18.9 billion. In 2019 there was also an increase in total expenditure by 4.2 % from HRK18.1 billion in 2018 to HRK 18.8 billion in 2019. The number of employees in companies increased from 17,842 to 20,139, i.e. by 12.9 %. The number of entrepreneurs who submitted reports also grew, from 2,104 to 2,180 (3.6 %). The share of local self-government units in the GDP of the Republic of Croatia is 1%, which is why any analysis of the financial impact of inter-municipal cooperation makes little sense as it cannot provide meaningful results, i.e. they are negligible in the total GDP. On the other hand, some analyses can be made when it comes to functional mergers and productive effects of inter-municipal cooperation and the impact of inter-municipal cooperation on the improvement of the quality of life and public utilities. However, the operation of local self-government units was often impacted by external factors which make it impossible to conduct a comprehensive analysis (Homeland War, economic crisis, migrant crisis, emigration wave, crisis caused by the COVID-19 virus etc.). Small local self-government units, small budgets, insufficient funds, lacking human resources – all these represent facts that force municipalities to change their way of thinking and structuring business. Abes (2012:29) suggests that local self-government units are faced with a riddle; structural decrease in revenue and at the same time a complex environment where the responsibility for services has to be viewed as multidisciplinary, multistate and multisectoral. Issues local authorities are facing are increasingly beyond the financial or service abilities of some authorities. A successful outcome when resources are limited requires managers to form a new system of regional cooperation. Successful adaptation to the reality of the 21st century requires managers to manage by identifying and designing new networks of cooperation, networks in which several governments, non-profit and private organizations will combine staff and resources in order to accomplish a common mission. One of the models for solving the problem is also inter-municipal cooperation in the use of EU funds. It is the European Outline Convention on Cross-border Co-operation between Territorial Communities or Authorities that allows municipalities to grow and develop. In accordance with this, European Union has provided a series of tools for the implementation of inter-municipal cooperation, one of which is definitely implementation of demanding development projects through programmes of cross-border cooperation. Today there are many service providers whose activities include offering municipalities and business people a variety of programmes and projects that can be financed through EU funds.

This is why those who have decided to try to compete for EU funds most of the time rely on outsourcing consultants from development agencies, companies or associations. However, according to the appendix of the paper entitled Twenty Years of Local Self-government in the Republic of Croatia (Koprić, Đulabić, 2013), in the market where such services are provided a number of service providers have emerged whose quality cannot be checked, so it is hard to choose, reasonably safely, an appropriate professional.

3. RESEARCH

As EU funds as well as funds provided by other domestic and foreign institutions are becoming ever more available, the need for individuals dealing only with this kind of work emerged as this may provide a steady influx of funds for the reconstruction of the economy and utility infrastructure. Five units of local self-government became aware of this - Tovarnik, Tompojevci, Stari Jankovci, Lovas and Ilok, so in the summer of 2005 they jointly set up a TINTL office, as stated on the internet page of the Tompojevci municipality (2017) . They wanted to contribute to the social and economic development of their communities by more intense and meaningful cooperation with local and international institutions and organizations. These local self-management units founded an organization following the model of inter-municipal cooperation, i.e. they "teamed up" in starting a common organization that will address and solve problems and needs that they all share. By doing this, i.e. by starting inter-municipal cooperation they solved a number of problems they shared such as: inability to fund development agencies independently, inability to monitor competitions for EU funds and other sources of funding, inability to create an application for calls for proposals, absence of services for the business sector etc. This cooperation also enabled cooperation between municipalities in the region through programmes of cross-border cooperation, the programme of the Danube Region Strategy and other EU level programmes. On its website the Croatian community of municipalities (Inter-municipal cooperation 2019) it is suggested that inter-municipal cooperation may have a beneficial impact on the rationalization and effectiveness of the operation of local self-management and the economy. Inter-municipal cooperation is essential at the operational level due to scarce human and financial resources and the inability of municipalities to address certain problems independently, and such cooperation on EU funding is essential for the dissemination of knowledge and skills required in the implementation of projects funded by the EU, as there is a significant lack of financial means as well as professional and operational knowledge and skills.

3.1. Development agency TINTL

The aim of the founders of the International Cooperation Office TINTL was to contribute to social and economic development of their communities by more intense and meaningful cooperation with local and international institutions and organization. The founding municipalities wanted to include other municipalities from their region in the operation of TINTL as they truly believed that it was worthwhile, but other municipalities were not very enthusiastic. As at that time EU funds seemed to be very far away, many people predicted TINTL would soon shut down, which is why they did not want to join. A lot of scepticism could be found among the people living in municipalities that were not TINTL members because many of them thought that it was just one more way to "politically provide for" certain individuals. But the professionals from the Office had completely different plans and they set the bar extremely high, which proved to be unattainable for other similar organizations in the region. While waiting for competitions and EU funding the staff of the Office decided to do for the local economy whatever it takes in order for businesses to be able to apply to some calls for proposals that were available at the time (calls for proposals of various ministries, the Project of Social and Economic Recovery etc.).

The only difference between them and other development agencies was the fact that they predominately worked for farmers, and they did all the projects free of charge. Of course, the results followed and the Office had great results - they implemented 23 projects worth over EUR 8.2 million in total in a very short time. Having seen their exceptional results and how the Office operated, the city of Ilok joined them in 2008. As at that time EU funds were becoming increasingly more available, the Office started developing projects that would apply for funding in future calls for proposals. As there are certain problems in any kind of work the Office, too, encountered insurmountable challenges, due to which Nijemci municipality abandoned the International Cooperation Office TINTL in 2010. Nevertheless, the Office continued its operation and achieved even better results and in 2014 Stari Jankovci municipality became a member of TINTL. The size of success of this "small"office is also confirmed by the fact that in 2011 Lovas municipality, as a consistuent part of the Office was declared the most successful municipality in the Republic of Croatia in terms of obtaining EU funds. The International Cooperation Office TINTL is today a member of numerous organizations such as the Danube Competence Center- DCC, Vinest network etc. (Markešić, 2013). Following trends, but also due to the fact that operating as an association of citizens, the members of the International Cooperation Office TINTL decided to set up Development Agency TINTL and The Agency was set up in 2018, but started to operate in 2019. Development Agency TINTL and the International Cooperation Office TINTL together achieved very good results in using EU funds. In terms of legal form the International Cooperation Office TINTL is an association of citizens, while Development Agency TINTL is an institution. International Cooperation Office TINTL is financed by membership fees of the units of local self-government and through its business activity. Business activity revenue accounts for 95% of total revenue. Development Agency TINTL is financed by the relevant government budget and is a 100% financed by public funds. Development Agency TINTL and the International Cooperation Office TINTL have together nine employees who work on the preparation and implementation of projects funded by the EU, but also by all other sources of funding. Employees include professionals with different backgrounds whose professional focus includes infrastructure projects, social policy and civil sector projects, but also business sector projects. Apart from these employees 17 more people have been hired for the implementation of the projects that are prepared by the said organizations and are funded exclusively by EU funds. One of the most successful municipalities in the Republic of Croatia in terms of obtaining EU funding is Lovas municipality, one of the co-founders of Development Agency TINTL. Lovas municipality is located in the very east of the Republic of Croatia and it consists of two villages, Lovas and Opatovac. According to official records, it has a population of 1,214, which places it among the smallest municipalities in the entire country. However, this does not prevent it to be successful in its work. It is inter-municipal cooperation on demanding development projects that contributed the most to the success of this small municipality. In 2015 the IRRI project - The Irrigation Project, which was funded from funds provided by the program of cross-border cooperation between Croatia and Bosnia and Herzegovin, was declared the most successful project in the Republic of Croatia that was funded by the EU in the period until 2014. Furthermore, Lovas municipality is ranked 6th in the list of units of local self-government in terms of using EU funding per capita. Up until 2014 and before it entered into inter-municipal cooperation managed by the International Cooperation Office TINTL, Stari Jankovci municipality used almost no EU funds. Through inter-municipal cooperation in the implementation of demanding development projects Stari Jankovci municipality has become an example of good practice and it is through these projects that it increased its budget by 100%. Today there is a large number of service providers that offer a variety of programmes within their business activity. This is why municipalities that have decided to try to apply for EU funds as a rule rely on outsourcing consultants from development agencies, companies or

associations. However, according to the appendix of the paper entitled Twenty Years of Local Self-government in the Republic of Croatia (Koprić, Đulabić, 2013), in the market where such services are provided a number of service providers have emerged whose quality cannot be checked, so it is hard to choose, reasonably safely, an appropriate professional. The economic crisis in 2009, the accession of the Republic of Croatia to the European Union in 2013, the migrant crisis in 2015 and the COVID-19 virus pandemic represent the most significant events that affected the economy of Vukovar-Srijem County after the Homeland War. This is why the very process of the accession of the Republic of Croatia to the European Union brought a certain level of scepticism, especially among business people who did not recognize their opportunities at the very beginning. On the contrary, they believed that the European Union would have a negative effect on their business. This is why using EU funds after Croatia obtained full membership did not arouse much interest among businesses. A case in point is the fact that in 2016 TINTL developed and submitted only 14 project applications of farmers for using the Rural Development Programme of the Republic of Croatia, which were all approved and financed. These 14 projects were developed through intense work and communication with farmers who reluctantly embarked on these projects. Organization TINTL developed all the projects for businesses free of charge, but there was initially little interest despite this. More substantial results in terms both of submitted and approved project applications followed in 2017, when a number of projects that represented examples of good practice had already been implemented.

	2017	2018	2019	2020	2021
Number of submitted project applications	101	142	120	106	121
Application amounts	80,209,249	178,216,615	110,492,675	57,195,750	34,419,398

Table 1: Number of submitted project applications and application amounts between 2007 and 2021
(Source: authors)

After the initial scepticism and mostly because of the examples of good practice, every year there is a significant increase in the number of project applications, and it is obvious that the interest of entrepreneurs is on the rise. Also, the disproportion between the submitted project application and approved projects in the business sector is growing because the calls for proposals are becoming more competitive, and the funds for the 2014-2020 period are getting smaller and in some programmes all the funds have already been allocated. One of the reasons for the growing interest of entrepreneurs in the preparation and submission of project applications to EU calls for proposals also includes big promotion of calls for proposals themselves, but also numerous workshops and education of business people.

Table following on the next page

	2017	2018	2019	2020	2021
Submitted project applications - LSGU	55	69	82	76	41
Application Amount-LSGU	75,140,235	167,417,511	107,449,053	53,581,310	27,087,301
Submitted project applications – business	37	66	14	14	5
Application amount - business	4.787.786	8.125.777	1.573.604	2.942.781	4.775.292
Submitted project applications-associations	9	7	24	16	75
Application amount - associations	281,228	2,673,327	1,470,018	671,659	2,556,805

Table 2: Number of submitted project applications and application by sectors between 2007 and 2021
(Source: authors)

As previously stated, the first substantial results achieved by submitted projects in the new financial perspective of the EU in 2014-2020 became visible in 2017, when a total of 32 project applications, the overall worth of which exceeded HRK 46 million, were approved for the TINTL area.

	2017	2018	2019	2020	2021
Number of approved projects	32	63	52	44	53
Amounts allocated to approved projects	46,381,481	28,605,205	62,679,330	91,287,389	22,709.956

Table 3: Number of approved project applications and amounts allocated to approved projects in 2017-2021
(Source: authors)

As can be seen in the above table the number of approved and contracted projects as well as the worth of projects themselves has grown significantly. In some business years there may be some deviations due to availability and publication of calls for proposals for EU funding. Also, a key factor involved in approving and contracting projects is also the very evaluation stage, which took as long as 24 months for some calls for proposals.

	2017	2018	2019	2020	2021
Approved projects-LSGU	25	40	32	33	37
Amount-LSGU	45,032,601	26,282,507	59,565,303	90,482,369	22,118,992
Approved projects - business	2	18	13	7	7
Amount-business	712271	2,202,465	2,440,057	672,805	459,800
Approved projects - associations	5	5	7	4	9
Amount-associations	636.609	120.233	673.970	132.215	131.164

Table 4: Number of approved projects and amounts allocated to approved projects by sectors in 2017-2021
(Source: authors)

In 2017-2021 the local self-government units had the largest number of approved projects, a total of 167 projects, which represents 68.44% of all contracted projects. As a result, local self-government units received the largest funds, i.e. HRK 243,481,772. This data is understandable as the largest number of calls for proposals and programmes of EU funds was aimed at the public sector, which was the one best prepared for receiving funds. Also, in the area of Vukovar-Srijem County the needs were the most urgent. In this period 47 projects were approved in the business sector, which represents 19.26% of all contracted projects. The amount of funds for these projects was HRK 6,487,398. In the same period 30 projects were approved in the civil sector, which accounts for 12.30% of all contracted projects. The amount of funds for these projects was HRK 1,694,191.

3.2. Economy of Vukovar-Srijem County

Croatian EU membership has made funding available, which businesses in the Srijem region have been using increasingly, and this can be also supported by the figures. Some global events, such as the COVID-19 pandemic have also affected the willingness of business people to invest. Overall, a positive shift is evident. However, despite the availability of EU funding and the ever increasing use of the funds for growth and development, the economy of the Republic of Croatia, and consequently Vukovar-Srijem County, is increasingly lagging behind the EU average. According to the data of the Croatian Bureau of Statistics, in 2016 GDP of EUR 1.07 million (HRK 8.179 million) per capita was generated in Vukovar-Srijem County. GDP per capita was EUR 6,475 (HRK 49,417) in 2016, which was 58.7% of the Croatian average. According to the text "Counties – developmental diversity and economic potential" (Županije-razvojna raznolikost i gospodarski potencijal;2020., p. 78.), in 2017 GDP of EUR 1.9 million (HRK 8.322 million) was generated in the Vukovar-Srijem county. In 2017 GDP per capita was EUR 6,817 (HRK 52,026). The above figures show that, nevertheless, there has been a certain shift in the economy of Vukovar-Srijem County should we compare these figures with those published by the Croatian Bureau of Statistics for Vukovar-Srijem County in 2014, which was the first year following the accession of the Republic of Croatia to the European Union.

That year GDP of EUR 1.02 million (HRK 7.784 million), which was 2.4% of the total GDP generated in the Republic of Croatia and 3.5% of total GDP generated in the statistical region of NUTS 2 level, Continental Croatia. In 2014 GDP per capita was EUR 5,897 (HRK44,993), which represented 58% of the Croatian average and 57% of Continental Croatia average, which is why the County was ranked 17th in Croatia. In Vukovar-Srijem County a total of 136,260 entrepreneurs generated a net profit of HRK 31.3 billion in 2019. In this period, 90,955 entrepreneurs (66.8%) generated a profit of HRK 48.9 billion, while 45,305 (33.2%) entrepreneurs reported a total loss of HRK 17.6 billion. The bulletin entitled Information on the state of economy in Vukovar-Srijem County in 2019 (Vukovarsko-srijemska županija, 2020) states that in 2019, total revenue of HRK 19.5 billion was generated in Vukovar-Srijem County, which is an increase compared to 2018, when businesses generated a total revenue of HRK 18.8 billion. In 2019 there was also an increase in total expenditure, which grew from HRK 18.1 billion in 2018 to HRK 18.8 billion (4.2%) The number of employees in companies increased from 17,842 to 20,139, (12.9%). The number of entrepreneurs also increased, from 2,104 to 2,180 throughout the County. Of the total revenue of companies in Vukovar-Srijem County, electricity, gas and steam supply accounts for the largest share with a total of generated revenue of HRK 7.5 billion (38.46 % of total revenue of all companies). It is followed by retail and wholesale, motor vehicles and motocycle repairs with HRK 3.6 billion (18,46 %) and manufacturing industry with HRK 3.1 billion or 15.89 % od total revenue of all companies. Compared to 2018 there was a change in revenue in terms of industries, so now retail and wholesale come second, and the manufacturing industry is in third place. The above data clearly show an obvious shift in the economy of Vukovar-Srijem County, to which projects financed by EU funds definitely contributed. In the last pre-crisis year, 2008, the developmental diversity and economic potential of most Croatian counties, i.e. Croatian NUTS 3 regions were ranked below one thousand of all EU NUTS 3 regions. According to a more recent classification of NUTS 3 regions (2016 version), for the year 2008 data are not available for a large number of EU NUTS 3 regions, but according to the former NUTS 3 classification (2013 version), it is obvious that in 2008 the three lowest ranked counties were Slavonian counties (there are five in total), which were among 6.4 per cent lowest ranked EU NUTS 3 regions. Large differences can be seen when we compare Croatian regions between themselves. The City of Zagreb, as the most developed Croatian county, had a 3.1 times larger GDP per capita by PPS than that in Brod-Posavina County, which was the lowest ranked Croatian county. Nine years later, according to data for 2017, it is obvious that Croatian counties are in a worse position than in 2008 in the context of EU NUTS 3 regions. These data coincided with the increase and decrease of GDP on national level. Thus, this fact shows a continuous fall of economic activity in the years of crisis, i.e between 2009 and 2014 there was a continuous fall of the real GDP. The trend of its real growth started only in 2015.

4. CONCLUSION

The Republic of Croatia, and thus Vukovar-Srijem County, has benefited a lot from EU membership in terms of EU funds. This is particularly reflected in data on projects implemented in the business sector, where it is obvious that the economy has made advances owing to the use of EU funds. Compared to other regions in the Republic of Croatia, Vukovar-Srijem County has improved its position. Every year (depending on published calls for proposals) more businesses submit their growth and development project applications and there is a positive climate around the calls for proposals themselves. The contribution of the Development Agency TINTL in terms of information provision, preparation and implementation of projects is substantial and it is clear that the interest of business people for services provided by the Agency is growing.

On the other hand, the fact that despite the availability of ever larger financial resources from EU funds, the entire economy of the Republic of Croatia is increasingly lagging behind the economy of other EU member states. However, continuous activity in the area of economic growth and development through the use of EU funds may have a significant contribution to reducing the uneven economic development of the Republic of Croatia.

LITERATURE:

1. Abels, M. (2012) Managing through collaborative networks: A twenty-first century mandate for local government. *State and Local Government Review*, *44*(1_suppl), pp.29S-43S.
2. Hrvatska gospodarska komora (2021) Županije- razvojna raznolikost i gospodarski potencijal. Elektronički zapis, https://www.hgk.hr/documents/analiza-zupanija-2020-web5ffd68620c52c.pdf (pristup 8.7.2021.)
3. Koprić, I., i Đulabić, V. (2013) Dvadeset godina lokalne i područne (regionalne) samouprave u Hrvatskoj: razvoj, stanje i perspektive. U: Lokalna samouprava i lokalni izbori. Zagreb: Institut za javnu upravu, pp.3-63.
4. Markešić, M. (2013), Potpora razvojnih agencija oživljavanju poljoprivrede navodnjavanjem na području Vukovarsko- srijemske županije, Visoka škola B.A. Krčelić, Zaprešić, str.13-17
5. Općina Tompojevci (2017), Osnovana razvojna agencija TINTL. Elektronički izvor, https://www.opcina-tompojevci.hr/osnovana-razvojna-agencija-tintl/ (pristup 22.11.2019.).
6. Strukturni fondovi.hr. (2021) Izvješće o korištenju Europskih strukturnih i investicijskih fondova, Elektronički zapis, https://strukturnifondovi.hr/wp-content/uploads/2021/04/Polugodisnje-za-razdoblje-1.1.2019.-31.12.2020-1.pdf, (pristup 7.7.2021.)
7. Vukovarsko-srijemska županija (2017) Razvojna strategija Vukovarsko-srijemske županije za razdoblje do 2020. godine. Elektronički zapis, http://www.vusz.hr/Cms_Data/Contents/VSZ/Folders/dokumenti/upravni2/~contents/QCQJH6TBML6QBTHN/razvojna-strategija-vs--2020.---s-analiza-stanja-sa-etak.pdf (pristup 22.11.2019.).
8. Vukovarsko srijemska županija (2019) Informacija o stanju gospodarstva Vukovarsko-srijemske županije u 2019. godini. *http://www.vusz.hr/Cms_Data/Contents/VSZ/Folders/dokumenti/upravni2/~contents/ZTU2BVU5FV2GVETD/informacija-o-stanju--gospodarstva-vs--u-2019.-godini.pdf* (pristup 8.7.2021.)

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