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ENCGT - Ecole Nationale de Commerce et de Gestion de Tanger - Abdelmalek Essaadi University
Polytechnic of Medimurje in Cakovec

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Editors:
Sanda Rasic Jelavic, Maria do Rosario Anjos, Diana Plantic Tadic

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CONTENTS

ANALYSE THE EFFECT OF FOREIGN DIRECT INVESTMENT INFLOWS ON THE DEVELOPMENT OF SMES IN VISEGRAD GROUP

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ABSTRACT

Foreign direct investment (FDI) and the expansion of Small and Medium-sized Enterprises (SMEs) are vital business participation engines. The influence of increased capital availability on the development of SMEs has maintained a solution to difficulties concerning the financial circumstances of Visegrad (V4) countries (the Czech Republic, Hungary, Poland and Slovakia). Rising FDI helps to higher GDP production in countries with high FDI levels. Increased capital expenditures and economic growth lead to higher productivity and, as a result, improved business performance. This study examined the impact of FDI on SME development in Visegrad countries. Secondary data was gathered using Eurostat and the World Bank database and examined yearly time series datasets collected from 2005 to 2021. Using EView software, the regression coefficients were used to examine the data. The regression coefficients revealed that FDI, GDP, gross savings, export of services and products, commercial bank loans, and gross value boosted Visegrad countries' SMEs. The study conclusions are found more accurate, although further considering SMEs of the Visegrad group based on FDI. It is recommended that a favourable platform for foreign investors be sustained in order to promote FDI capital flow into Visegrad countries.

Keywords: *FDI, SMEs, economic growth, Visegrad Group, Exports, GDP, Gross Value added,*

1. INTRODUCTION

In today's competitive economy, foreign direct investment (FDI) is critical to each nation's economic growth. It can provide firms with new marketing and business platforms, money, access to advanced technologies, and expertise.

It brings financing, management expertise, and technology to the partner nation, increasing economic growth (Kang et al., 2021). FDI is a corporation in one nation engaging in tangible financing to construct a business in another economy. To explain it from another perspective, FDI is a long-term investment opportunity that indicates the long-term commitment and ownership of a local businessman in an organization situated in another country than international business organizations (Melane-Lavado et al., 2018). FDI in developing economies gives several benefits that support economic growth. Firstly, FDI transfers capital capabilities to beneficiaries or neighbouring countries, which can be used to build industrial infrastructure. Secondly, technologies and organizational expertise, all important for business prosperity, may be transferred to host countries. Thirdly, FDI enables host countries to participate in various systems, like foreign company revenue and purchasing connections. Host economies may enhance shipments and imports of high-quality resources, increasing performance by coordinating worldwide partners (Z et al., 2019). Acquiring foreign financial resources is one of the most significant components of the efficient macroeconomic growth of Central and Eastern European economies. Since their membership in the European Union, the Visegrad Four (the Czech Republic, Hungary, Poland and Slovakia) economies' mutual business and financial collaboration have been primary determinants of economic improvement and demographic development. Foreign direct investment has also significantly influenced the Visegrad Group's member countries' growth and quick entrance into the global marketplace (Pu & Zheng, 2015). Foreign corporations have introduced innovations, expertise, and contemporary organizational and managerial skills and boosted host countries' efficiency and export capacity through financing. Government agencies' efficient financial plans have mainly facilitated this. Economies' availability to international business significantly impacts FDI (Darmo et al., 2020). Moreover, Visegrad Group economies can boast outstanding performance due to vigorous FDI-attraction policies. It is also feasible to see the uncertain and occasionally adverse implications of FDI on the economy's short, medium, and long-term economic growth and the uncertain and unbalanced influences on various organizations concerning the capacity and availability of credit which is supported by stable and accurate datasets and available empirical studies (Ercegovac & Beker-Pucar, 2021). FDI benefits economies, including the blooming capital sector, the most. In other words, a well-functioning investment marketplace guarantees that money is supplied to business projects that give the maximum profits, hence increasing growth rates (Simionescu et al., 2021). Moreover, Small and medium-sized enterprises (SMEs)' development is hampered by the restricted availability of finance marketplaces. If SMEs provide for higher absorption and implementation of excellent technological practices made accessible by FDI, the lack of improved financial markets restricts the possible beneficial FDI consequences. FDI significantly contributes to growth by increasing the production efficiency of local companies. The number of local companies that can operate (and hence benefit from FDI spillovers) is determined by financial access and, consequently, the performance of the national financial network. Internalizing the advantages of FDI, a host nation's financial structure must promote the growth of indigenous firms (Bannò et al., 2014). Enhanced lending to private companies indicates intense financial-economic activity, whereas increased financing to government corporations indicates harmful financial-economic activity. Also, the research indicates that economic enterprises, mainly traditional banks, support the government business segment over the private industry and enable a significant percentage of revenue to move into inefficient government corporations. Although government corporations obtain practically unlimited assistance from government banks, they have few incentives to learn from FDI to boost performance and compete with the active private industry. Therefore, they are motivated to expand the scope of capital formation to appease the government's worries (Lomachynska et al., 2020). Moreover, private enterprises are excited to learn and may be able to take full advantage if given a chance.

Along with the advantages which can be derived from various lengths of international firms, host nations can also benefit from FDI in SME development (Goel & Saunoris, 2021). Transfer of technology is critical considering the significance of entrepreneurial orientation in a nation's economic success and the advancement of technology in industrialized countries. SMEs in developed countries, in general, depend on market accessibility and expertise to sustain and grow. The availability of information helps SMEs make successful investments and develop sophisticated technologies, guaranteeing their own and the nation's overall efficiency (Tang & Beer, 2021). This technological development can be acquired through the externality impact of international direct investments. FDI is among the most significant sources of current technical expertise and technological advancement. Small and medium-sized businesses are critical for enhanced utilization of natural resources, employment generation, regional growth, business and technology improvement, mobilization of local investment, interactions with vast businesses, career opportunities, and the advantages of executive training programmes (Makieła et al., 2021). Our research is focused on the following questions: (i) Does FDI typically increase the development activities of SMEs in Visegrad countries? (ii) What variables account for the disparities in estimates between research findings? The responses to these questions will help us better comprehend the link between FDI and SMEs' development. They are also essential in government policy: the effectiveness of the government's earnest efforts to support the development of SMEs through FDI depends on them.

2. LITERATURE REVIEW

Foreign corporations exchange technologies with their associates via FDI, a strategy that can also provide externalities to unaffiliated enterprises in the host country, augmenting development with efficiency and productivity improvements by local businesses (Zheng et al., 2020). FDI enhances production in Visegrad nations by transferring technologies and effectiveness to local enterprises, stimulating innovations in small and medium-sized businesses, enabling technology adoption, and increasing human investment. Small and medium-sized businesses characterize the favourable impact of foreign enterprises on local companies' efficiency (Dorozynski & Kuna-Marszalek, 2016). FDI boosts economic development by promoting innovation, with international corporations investing in new technologies directly in their foreign operations or indirectly in locally controlled and owned businesses in the host nation. FDI promotes long-term economic output through research, development, and human resources (Comotti et al., 2020). It is indicated that by promoting innovation in their organizations and spreading advanced technologies to unassociated businesses in the host country, multinational corporations can accelerate the advancement of new transitional brand types, improve product efficiency, promote global R&D collaborative effort, and incorporate new forms of human resources (FLISSAK, 2021). FDI adds to overall factor performance and rising incomes in host countries. According to the research, regulations that encourage indigenous, high technology abilities, including academic achievement, highly specialized skills development, and R&D, boost the accumulated percentage of transmission of technological advancements from Direct investment, and export-friendly business reforms are, however, required preconditions for favourable foreign direct investment influence that reduce the technological gap (Tchorek, 2016). Besides, the amount to which FDI influences host nations is determined by their potential to consolidate and internalize the advantages that come with it. Visegrad countries face difficulties directing FDI towards productive industries such as industrial production. Therefore, the main problem is providing a level playing field for national and international entrepreneurs. In most situations, international corporations are too giant for national enterprises to compete, driving out national companies. Additionally, a rise in imports required by such international corporations to make products may impede market productivity (Dorozyński & Kuna-Marszałek, 2014).

FDI influencing factors differ among nations and provinces and change with time. Among these, many conceptual frameworks are the neoclassical theoretical approach, market failures, product lifespan theory, and eclectic approaches, which have been created to interpret the occurrence of FDI. According to the most stringent neoclassical theory, the weakest nations would have the best return on investment and demand the most FDI. Over the previous five decades, industrialized nations with sufficient investment garnered more FDI contributions. Furthermore, numerous theoretical approaches have been offered within the idea of commercial structure, but in these models, FDI is influenced only by company considerations, with no consideration for host-country variables (Uyar et al., 2022). The canonical concept for determinants of FDI builds on previous evidence that represents a thorough assessment focused on organization, geography, and the internationalization (OLI) perspective. According to this concept, corporations internationalize output for two main reasons: marketplace searching and pursuing efficiencies (Franco, 2012). Build a horizontal FDI model based on the international character of foreign enterprises, implying that corporations prefer to join the international marketplace through FDI instead of exports with more significant trade expenditures. The most prominent motives for transnational FDI activities appear to be business expansion and accessibility to new nations. As a result, horizontal enterprises want to increase connections while decreasing trade expenditures (i.e., import duties, transportation costs, and investment constraints) (Martinez-San Roman et al., 2021). Vertical FDI eliminates transportation and customs costs, so manufacturing facilities are developed based on a comparative resource endowment differential rather than saving on transportation costs. Thus, vertical FDI and transportation expenses are inversely connected. Reduced business expenditure promotes connectivity, which increases FDI. When vertical and horizontal models are merged into the Model of Knowledge Capital (KC), different kinds of international corporations can interact depending on the types of host and source nation qualities (Cieślik, 2021). A further helpful modification of the KC model suggests complicated vertical FDI with industrial mobility in several surrounding nations with more favourable resources. The FDI export system in which import tariffs among numerous host nations' potential international markets are lower than customs duties between the host and target nations. In that instance, the international corporation will choose the most advantageous target country to service additional host economies through export marketplaces (Stack et al., 2017). The dominant investor concepts of FDI are progressively being challenged by various sorts of technology, capital investment, trade expense reduction, and the emergence of Asian platform transnational business. The emergence of the global FDI strategy has essential consequences for FDI empirical research. At the same time, a large body of data implies that economic indicators, including economic growth and expansion, workforce and human resources, worldwide business, and infrastructural growth, are significant predictors of FDI inflows (Ghebrihiwet, 2017). Gherghina (2019) recommended analyzing FDI inflows and economic improvement in Central and Eastern European countries. He highlights foreign financial inflows as an aggregate collection of physical capital, technical expertise, and technology that promotes the expansion of businesses in Central and Eastern European nations (CEE). Foreign investment exacerbates the absence of local finance to support modifications in the ownership of capital and allocation. As a dependable long-term financial inflow, direct foreign investment may contribute the essential technologies, management expertise, and expertise to reorganize businesses (Gherghina et al., 2019; Mihaylova, 2020). According to the author, the anticipation of obtaining FDI resulted in better administration. Besides, economic circumstances highlighted by low inflation significantly impact the entrance of foreign investment. The attraction of FDI in CEE nations is unaffected by the proper standard of facilities. Modifications in unit labour costs have a considerable influence on FDI effectiveness.

The critical element leading to the entry of international direct investment by international corporations is generally affordable unit labour expenses (Paul et al., 2014). Stack et al., (2017) revealed the following findings for the Czech Republic and Slovakia. These transformation nations have many resources required to grow their professional workforce and a community-oriented toward SMEs. According to the author, these nations, especially the Visegrad Group, should seek international finance. The author also says that demonstrating governmental and economic consistency is crucial in attracting financing. The Czech and Slovak Republics can facilitate the transformation to a free and democratic economy by boosting openness in the legal, financial, and financial market sectors (Dorozyński & Kuna-Marszałek, 2014). Although there are several favourable consequences of FDI, it is essential to note that they also have unfavourable effects. There is an indication that when FDI increases, national business productivity drops, and the unemployment rate may rise because foreign businesses use advanced and innovative technology that requires fewer people than identical national enterprises (Lugemwa, 2014). They seek to utilize cheap domestic supplies. The concept of sharing knowledge from international businesses is generally targeted at domestic manufacturers or consumers, and limiting the outflow of technologies to domestic rivals is usually accomplished through intellectual property protection, which has a significant impact (AHMADOV, 2020). The relevance of FDI parameters supports an efficient state investment strategy in the Visegrad Group. The correlation between FDI and economic growth is an incredibly significant component of investigating the influence of FDI on a country's financial stability. Several studies agree that the expansion of business sectors positively impacts FDI contributions. Financial markets, the expansion of the banking system, and FDI inflows, in particular, all promote economic growth through numerous pathways (Chetverikova, 2020). Furthermore, the influence of FDI on the worldwide competition among Central and Eastern Europe (CEE) countries, particularly in the long term, has received little consideration. Considering that the countries of CEE have long been incorporated into the EU business and the international economy and have been significantly participating in the allocation of worldwide wealth, this is a serious subject that requires further investigation, particularly of rising worldwide competitiveness and international economic uncertainties (Darmo et al., 2020). More excellent economic development prospects lead to enhanced demand for bank loans. FDI might affect bank deposits immediately through enhanced capital flows to company activities or surplus capital flows in the marketplace through the alternative path. Enhanced capital flows in the economic sector as an outcome of higher foreign direct investment in domestic businesses lead to enhanced reserves in the banking network. A bank loan serves as an intermediary for an enhanced influx of deposits resulting from foreign direct investments (Konara et al., 2019). The behaviour of banking specialization and competitiveness would influence bank lending costs. Banks would compete in pricing particular loan services in a reduced concentration situation, affecting their profit adversely. The entry of international banks and corporations would increase competitiveness in the domestic marketplace and place additional lower pressure on national bank profitability. Furthermore, a subsequent drop in FDI inflows negatively impacts enterprises' financial positions; consequently, they begin defaulting on their consumer loans, resulting in a considerable percentage of non-performing debts in banks' asset records. The increased number of non-performing debts and subsequent write-offs impair bank revenue efficiency (Jindřichovská et al., 2020). Various additional variables lead to a crowding-out effect, which offsets these favourable effects. On the supply side, FDI might boost technical requirements and prefer to cooperate with more extensive, well-established businesses, producing new initiatives that are more challenging to succeed. FDI may be given a favourable tax structure, giving it a significant advantage among host-country corporations while harming emerging companies' commercial potential (Li & Hu, 2013).

Furthermore, while they prefer to compensate better, foreign-funded organizations may attract trained and experienced individuals, luring them away from launching their respective companies. On the demand side, FDI increases competition in the market, cutting goods costs and reducing rivals' profit, mainly start-up businesses. Furthermore, their introduction into the domestic marketplace boosts regional salaries, raising workforce expenses and rendering it more challenging for entrepreneurs to make revenue (Tülüce & Doğan, 2014).

3. DATA AND METHODOLOGY

3.1. Data Collection

Data was acquired from secondary sources to evaluate the impact of foreign direct investment on the development of SMEs in the Visegrad Group (V4). World Bank Database and Eurostat are used as secondary data sources for SMEs, FDI, GDP, exports of goods and services, gross savings, gross value added, and commercial bank loans. The study focused on 2005 to 2021 and analyzed using ordinary least square regression.

3.2. Model Specification

The appropriate methodology is based on financial intermediaries' models that explain the relevance of revenue in the growth of SMEs. Domestic savings and commercial bank loans are the two primary sources of capital for SME development in host countries. FDI increases SME production. The General linear model (GLM) multiple regression equations examine SME variations in the Visegrad areas; the total regression model for SMEs is calculated. In light of this logic, the model employed in this analysis aimed to assess the efficacy of FDI in SMEs using World Development Indicators measuring millions of US$ described as follows:

$$SME = \beta_0 + \beta_1 FDI + \beta_2 GDP + \beta_3 Exports\_gs + \beta_4 gSaving + \beta_5 gVA + \beta_6 CBL + u \quad e.3.2.1$$

Where;
SME: No. of SMEs
FDI: Foreign direct investment, net inflows
GDP: GDP (in Million US$)
Exports_gs: Exports of goods and services
gSaving: Gross Savings
gVA: gross value added
CBL: Commercial Bank Loan
u: error term

Following the exploratory investigation by the scholars, which reveals that the influence of the two factors is insignificant to the entire SME's performance, government expenditures and rising prices are eliminated from this formula. Furthermore, a new parameter, gross value added, is included. The analysis only evaluated the aforementioned collected data from 2005 to 2021; the timeframe was chosen based on data accessibility. All of the technological coefficients in the preceding equation are predicted to positively or negatively influence the efficiency of SMEs in Visegrad areas concerning independent factors.

4. RESULTS AND DISCUSSION

The correlation matrix, as shown in Table 1, demonstrated the level of correlation between the variables. SMEs were shown to be favourably connected with foreign direct investment in Hungary (0.677) and Poland (0.165) but adversely correlated with FDI in the Czech Republic (-0.301) and Slovakia (-0.417) at an insignificant level.

V4	Variables	Significant level	FDI	GDP	Exports_gs	gSaving	gVA	CBL
Czech Republic	**SMEs**	Pearson Correlation	-0.301	0.766**	0.904**	0.685**	0.755**	0.912**
		Sig. (2-tailed)	0.241	0.000	0.000	0.002	0.000	0.000
Slovakia		Pearson Correlation	-0.417	0.745**	0.801**	0.320	0.693**	0.956**
		Sig. (2-tailed)	0.096	0.001	0.000	0.210	0.002	0.000
Hungary		Pearson Correlation	0.677**	0.711**	0.480	0.639**	0.702**	-0.115
		Sig. (2-tailed)	0.003	0.001	0.051	0.006	0.002	0.661
Poland		Pearson Correlation	0.165	0.784**	0.912**	0.903**	0.777**	0.674**
		Sig. (2-tailed)	0.527	0.000	0.000	0.000	0.000	0.003

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

Table 1: Correlation Matrix

According to the positive value of FDI for Hungary and Poland, we will analyze both countries using ordinary least square regression.

Dependent Variable: SMEs
Method: Least Squares
Date: 12/13/22 Time: 13:35
Sample: 2005 - 2021
Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	1.51E-07	1.04E-07	1.458056	0.1755
GDP	2.07E-06	1.42E-06	1.459463	0.1751
Expoet_gs	-3.36E-06	9.70E-07	-3.467648	0.0060
gSaving	2.83E-06	2.39E-06	1.185598	0.2632
gVA	2.02E-06	1.32E-06	1.526788	0.1578
CBL	-3.89E-07	6.57E-07	-0.591751	0.5672
C	0.343465	0.059160	5.805648	0.0002

R-squared	0.871864	Mean dependent var	0.561849
Adjusted R-squared	0.794983	S.D. dependent var	0.044903
S.E. of regression	0.020331	Akaike info criterion	-4.660400
Sum squared resid	0.004134	Schwarz criterion	-4.317312
Log likelihood	46.61340	Hannan-Quinn criter.	-4.626297
F-statistic	11.34036	Durbin-Watson stat	1.447160
Prob(F-statistic)	0.000579		

Table 2: Aggregate Output Results of Least Squares for the Hungary

According to the study's findings (Table 2), FDI took part in enhancing the development of Hungarian SMEs. The regression coefficients with each independent variable fulfilled the requirements. The independent variables, including FDI, GDP, gVA, and gSaving, demonstrated a significantly positive relationship with SMEs in Hungary. As a result, as the proportion of these independent variables rose, the effectiveness of SMEs increased. Exports and CBL had a negative relationship with SMEs. When analyzing the bank loan's influence on Hungary, it was also essential to correlate this component to the population of individuals decreasing the country's economic growth. It has been determined that decreases in corporate loans from a bank and exports significantly reduced the group of investors' significant contributions to SME growth, implying that low returns on loans from a bank decrease the

efficiency of SME development. Which predicts that SME growth will slow, and Hungary's industrial development will be harmed. The Durbin-Watson value of 1.447 indicated insufficient data in the analysis to indicate the occurrence of time series. The diagnostic tests' results showed that the framework was working well. The whole model had a significant estimation coefficient of 0.87, which means that FDI, GDP, Export_gs, gSaving, gVA, and CBL represented 87% of the variance in SME productivity. The computed F-statistic of 11.340 was significant, indicating that the regression or analysis is considerable and hence suitable for forecasting.

Dependent Variable: SMEs
Method: Least Squares
Date: 12/13/22 Time: 13:44
Sample: 2005 - 2021
Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	1.41E-06	4.02E-06	0.351411	0.7326
GDP	3.07E-06	1.02E-05	0.300251	0.7701
Export_gs	2.30E-06	1.28E-06	1.803212	0.1015
gSaving	1.02E-05	5.99E-06	1.700951	0.1198
gVA	-5.86E-06	1.22E-05	-0.479534	0.6419
CBL	-2.93E-07	1.25E-06	-0.234158	0.8196
C	1.241401	0.264396	4.695224	0.0008

R-squared	0.928672	Mean dependent var	1.630851
Adjusted R-squared	0.885875	S.D. dependent var	0.228099
S.E. of regression	0.077057	Akaike info criterion	-1.995632
Sum squared resid	0.059378	Schwarz criterion	-1.652544
Log likelihood	23.96287	Hannan-Quinn criter.	-1.961528
F-statistic	21.69944	Durbin-Watson stat	1.428079
Prob(F-statistic)	0.000034		

Table 3: Aggregate Output Results of Least Squares for the Poland

A regression model of Polish FDI was also developed, as shown in Table 3. FDI and exports were much more productive. The gVA and CBL had a negative relationship with SMEs, and both independent variables reduced the expansion of SMEs in Poland. Although the regression coefficients for every independent variable satisfied the criteria, FDI, GDP, Export_gs, and gSaving all possessed a significant positive relationship with SMEs in Poland. As an outcome, the frequency of such independent variables changed, affecting SMEs' growth. The F-statistic of 21.699 proved the significance of the entire model or variables in the computation. Value 0.92 in a model had a relatively high coefficient of accuracy, which suggested that FDI, GDP, Export_gs, gSaving, gVA, and CBL illustrated 92% of the difference in SME performance. The Durbin Watson value of 1.428 indicated insufficient data in the model to demonstrate the assumption of regression analysis.

5. CONCLUSION

FDI has ability to attract business opportunities and favorable for SMEs development in some host countries of Visegrad group. FDI is limited in the Czech Republic and Slovakia. Hungary and Poland have a significant positive correlation with FDI and SMEs development. Hungary, which leads to the pure terms of aggregated FDI contributions, highest ranks among the Visegrad countries.

It is crucial to highlight that cumulative FDI investment opportunities were the primary determinant in continuing to increase not only the statistical measures of exports, GDP, gSaving, and gVA, but also the entire conversion of their framework, which significantly reduced the share of conventional labour-intensive products and enhanced the share of industrial application resources. It is especially significant to consider that the percentage of the high-tech sector has increased. FDI is an essential component in economic development. The entry of foreign money into the actual sectors of these countries' businesses, along with a cheap and trained workforce, contributes to improved industrial output productivity and effectiveness. On the other hand, the economic progress has become increasingly dependent on FDI inflows and foreign factors. FDI increased the output, exports, GDP, and, most importantly, explanatory variables of SMEs. Overall, FDI boosted many countries' payment balances by increasing income to government budgets through privatization, rentals, and taxation. Meanwhile, the long-term impact of FDI is uncertain because, over time, the dependency of the payment balance on the utilization of their revenue by international entrepreneurs, which, on average, promptly leave the destination country in times of uncertainty, international shareholders utilize imported materials more frequently. Global corporations have additional options to employ strategic planning, which results in a comparative reduction in the government's budget income over time.

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GEO-ECONOMY OF POVERTY REVISITED BY ULTRALIBERALISM

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ABSTRACT

Poverty is a recurrent phenomenon and its permanence as an object of research proves it. The break made by the market evangelists with the values of ancient societies was at the origin of the advent of a new form of poverty, a "modernized poverty" that has nothing to do with poverty in its vernacular, Greek or Arab-Muslim form. This new version of poverty is the result of pressures and frustrations brought about by the economicisation of human societies. Modernized poverty has seen its greatest rise with the advent of the phenomenon of globalization. It is currently the art of the underdeveloped countries, since for these same countries the counterpart of integration into the "global village" is synonymous with renouncing the ancestral ways of life and protection of these societies. The current contribution is to highlight the extent of deprivation in an era of successive crises and a challenge to the single-mindedness of market evangelists. Our work is the result of a series of observations combined with a heterodox analysis of poverty and deprivation. We have sought to highlight the nature of the poverty-growth causality. Does growth really mean less deprivation? Does economic growth really benefit the poor? Are we not witnessing the advent of a new version of deprivation as a result of non-membership or rather exclusion from a dominant standard of living?

Keywords: *Poverty, Deprivation, Market, Despotism, Growth, Development, Misery*

1. DEVELOPMENT: THE STORY OF A NEW POVERTY

Much has been written about development, the new word whose initial idea was to serve the cause of all victims of social and economic discrimination, in particular, all the poor produced by colonial regimes. The myth was sufficiently tenacious in the minds of its promoters that, fifty years after the introduction of the word, the misfortunes it caused in terms of uprooting and impoverishing hundreds of millions of poor people did not prevent the heads of state of all the countries of the world from unanimously reaffirming, before the General Assembly of the United Nations, their unreserved commitment to development programs. These misfortunes - which the euphemistic vocabulary of some economists calls *spillover* or secondary or collateral effects - have been studied enough and their figures are quite apparent. We felt it important to note two other significant facts: the preponderance of development in the dominant language of poverty; and its key role in the processes of colonization of the contemporary imaginary. If the concept of development enjoyed almost unanimous support from the outset, it was because it was at the convergence of three conceptions of change from very different sources: that of the new neo-colonial powers, that of the ruling classes of the countries concerned, and that of the populations of these same countries. For its Western promoters, it represented an ideal mask for breathing new life into the colonial enterprise under a neutral and promising name. At the same time, it embodied the vitality and intelligence of a dynamic economic system that was looking for relays in all the independent countries, in order to propose to them to open a new page of 'cooperation'.

The novelty of the approach lay in the idea of a 'partnership' designed to respond to needs defined by the 'poor' countries, which could give them the illusion of participating on an equal footing in the major decisions concerning their future. For the ruling classes of this 'Third World', the idea represented the hope of admission to the affluent club, but also the opportunity to convince their peoples that the time had come for all to taste the promise of shared economic abundance. For populations uprooted and dispossessed of their wealth by centuries of colonial domination, it finally meant hope of regaining their rightful place. In countries declared to be poor, however, the word development has been used to more subtly colonize first the elites and then the population at large. The elites began by accepting, often without reservation, the social policies proposed by the economies of the North. Then they acted as relays to explain to the local populations, in a language adapted to national conditions, what their poverty was and what they needed to do. What did their poverty consist of and what types of intervention were most appropriate to end this condition? In reality, the most tangible result of development programs, in the South as in the North, has been to deprive the poor of the means to fight new miseries on their own and to install the new winners of the operation in the decisive control posts. In the South, these positions allowed local leaders - especially those who had succeeded the first generation of nationalist and anti-colonial fighters - to sell off all the natural and 'human' resources of their populations at the lowest possible price in exchange for assistance program that were most often designed to consolidate the internal colonization of the country by the same leaders. All these processes of recolonization of the peoples of the Third World have been greatly facilitated by the new language of development. It was this language, for example, that introduced the idea that certain countries were now declared 'poor' and 'underdeveloped'. On what basis? Because they lacked the necessary economic resources and poverty was generally an essentially economic problem. International aid would then benefit from taking into account a scale corresponding to the different levels of national income. As the least developed countries were entitled to more aid than others, some governments went so far as to claim to be *the* least *developed countries.* In order to manage the fight against poverty and ensure coherence between often contradictory objectives and intentions, the same language has introduced a whole vocabulary around the notion of 'priorities'. The first of these was the creation of national institutions and frameworks for development and infrastructure necessary for the exercise of 'national sovereignty'. While entire populations were systematically impoverished and deprived of the means of subsistence, a considerable part of national resources was thus directed towards the 'priority' needs of states, on the one hand to strengthen the armed forces, repressive institutions and the bureaucracy, and on the other hand, to direct all the productive capacities of countries towards exports in order to be able to repay part of the debts contracted for financial, economic, military, technical assistance, etc. Thus, in the name of development and the fight against poverty, most countries declared to be poor or underdeveloped have rapidly become zones of influence for economic and political powers that have become their backers and protectors. It is in this respect that the dominant language, under the guise of humanitarian action and cooperation, has contributed to instituting a new form of modernized slavery on a global scale. Whether at the individual or national level, the social construction of poverty on a global scale serves the cause of a productive system favorable to the interests of the rich and dominant infinitely more than that of the poor it claims to help. The same is true of the language that has made it possible, the condescending accents of which stigmatize the poor as useless individuals and social parasites who produce nothing and always demand more. It is a language that transforms all the rejects of the modern economy, whether individuals or entire nations, into 'welfare recipients' incapable of taking charge of their lives. It is a perfectly binary language that deprives them of any power of decision, since it pushes them either to take the risk of uprooting themselves in order to integrate the world of "progress" (where most of them will be condemned to modernized poverty), or to return to their roots in a land that successive

colonisers have impoverished, drained or polluted. This supposedly scientific and humanitarian "nonlanguage", blind to the true dimensions of poverty, is all the less capable of helping the poor to fight against the socially manufactured needs that the global market makes them covet, as it has itself become a major cause of impoverishment. The tightening grip on hundreds of millions of poor people around the world is not, therefore, the result of a lack of "development" or "economic growth". Certainly, the material dimension of their poverty remains an undeniable concern. But the history of the last two centuries proves, alas, that the highest rates of growth have nowhere been able to provide a satisfactory answer to the real issues, including material ones. For market evangelists, removing barriers to trade is one of the most decisive steps governments can take to give poor countries greater access to global prosperity. Indeed, the World Bank's 2009 report concluded that *"openness is the reason* why *globalisation leads to faster growth and poverty reduction in countries"*. In other words, integration through trade and openness is seen as an almost automatic guarantee of faster growth and poverty reduction. In the face of this determinism, there has been a rise of voices denouncing the reductionism of the approach adopted by the ultraliberals. The question that arises here is: Does liberal globalisation really benefit the poor? Between 1998 and 2008, the incidence of poverty in the world declined at a rate of 0.2% per year. The already colossal income inequalities are only widening. By the end of the 2000s, high-income countries with 14% of the world's population shared more than three quarters of global income[1] . By the end of the 1990s, the global economy was more unequal than any national economy since then. Some economists claim, without any credible evidence, that the incomes of the rich and poor are beginning to converge. There is no longer any doubt that international trade reinforces income inequality. As exports grow faster than global GDP, they have an increasingly important effect on income distribution. The shares of world trade mirror the patterns of income distribution. In this respect, it is worth noting that for every dollar of exports, $0.75 goes to the world's richest countries and about $0.03 to low-income countries. According to Kevin Watkins, Senior Advisor at Oxfam, *"until developing countries receive a larger share, trade will continue to contribute to widening income gaps in absolute terms*"[2] . It is therefore clearly wrong to claim that the incomes of the poor are systematically rising in line with growth and economic openness, as confirmed by Amartya Sen in his book *"Rethinking Inequality"*. He argues that countries with low income inequality can expect much higher levels of poverty reduction than those with high inequality. Openness per se is therefore not really a poverty reduction strategy. The Poverty Reduction Strategy Papers (PRSPs)[3] prepared by governments with IMF and World Bank-supported programmes provide an excellent opportunity to develop a truly poverty-focused approach to trade policy. Yet most PRSPs do little more than repeat the conventional wisdom about the virtues of free trade. These assumptions that inform government actions often have serious consequences for poverty reduction. For example, Cambodia's PRSP envisages rapid general liberalisation of imports, with tariffs being lowered to an average of 5%, even for sensitive agricultural products such as rice. Yet, in a country where one third of the population lives below the poverty line, the PRSP does not include any assessment of the consequences of such measures on rural income distribution, even though rice is the very pillar of the rural economy and society. The received idea that sustained growth is synonymous with a decline in poverty is therefore subject to serious criticism. The opposite is true, however, since deprivation in its Western version is rather the result of a blind liberalization of markets leading to an increasing exclusion of people who are victims of an increasing economicisation of their societies. The same point of view has been underlined by the proponents of the modernized poverty approach.

[1] These figures are taken from a report published by the World Bank in 1999, "*True World Income Distribution, 1988 and 1993*", p. 73.
[2]International Monetary Fund, "Physionomy of Global Integration", *Finance and Development*, March 2002.
[3] International Monetary Fund, "*Annual Report 2001*", website: http/www.imf.org

During the 1950s and 1960s, the World Bank mainly financed infrastructure (roads, railways, power plants, ports, telecommunications, etc.). It was argued that providing a country with a good infrastructure network stimulates development. Thus, it refers to the *trickle-down effect* theory, commonly known as spillover economics. For World Bank experts, the best way to help the poor is to promote growth. "*They believe in trickle-down economics"*[4] . The benefits of growth, they argue, eventually cascade down to the poorest. Yet in 19th century England, pauperism was increasing as the country grew richer overall. In his famous book *"The Great Disillusionment"*, Joseph Stiglitz points out that *"it is true that poverty cannot be reduced sustainably without strong economic growth. But the reverse is not true. If there is growth, there is no requirement that it be inclusive. It is not true that "the rising tide lifts all boats". Sometimes, when the tide rises quickly, especially in heavy weather, it throws the frailest boats against the rocks of the coast and smashes them to pieces.* Thus, the illusions created by the language of the dominant institutions have already transformed many victims of modernized misery into agents of their own downfall, or even into violent actors with sterile and self-destructive behavior. The last four decades have unfortunately seen the development of this type of language, based on populist claims of an ethnic, nationalist, political or religious nature, intended to combat the apparently most revolting, but often superficial, symptoms of the injustices suffered. The masses, deeply bruised by a long history of humiliation and structural violence, naturally favor these defiant, temporarily liberating discourses. But this purely reactive language is no different from the one that created it. The language of the 'impoverished' promoted by a politicized fundamentalism is one of the most striking examples: after borrowing the culturally constituted vocabulary of the real poor, it was put at the service of a politico-religious ideology, was transfigured by this instrumentalization and ended up turning against the poor themselves. On the other hand, where the most far-sighted poor and those most attached to the traditions of conviviality have sought to invent a language that reflects their own experiences, they have been able to turn it into a refined instrument for the pursuit of alternative lifestyles that correspond to their own aspirations, and that take into account both their traditions of simplicity and hospitality and the demands of a modern society where everything is constantly being rethought.

2. MODERNIZED POVERTY

The concept of modernized poverty is the work of Professor Majid Rahnema, a diplomat and former Minister of Science in Iran. This new version of poverty is the result of pressures and frustrations brought about by the economicisation of human societies. Majid Rahnema believes that this modernized poverty threatens all social categories. *"Notwithstanding the fact that the goods and services produced by the modern economy are now sufficient to meet the basic needs of all the world's populations for their well-being, the vast majority of them are experiencing poverty or are threatened by it. This anomaly is coupled with a perfectly paradoxical discourse: societies that advocate the principles of sovereignty and freedom for the individual, and equality for all, in fact reduce the human being to a mere market value, increase inequalities and reinforce anti-democratic structures, and thereby create new hierarchies that are even more difficult to combat*. For liberal ideologies, the period of structural adjustment was of great benefit to underdeveloped societies. This is because it gave them time to adapt to the new laws of the market and allowed the poor to benefit from the *trickle down effect of* growth. However, the same strategies that claim to be able to raise their standard of living often only raise the needs of the poor and their hopes of achieving them, and make them even more dependent on the system in the long run. The same people left behind are weakened by another syndrome, namely the loss of self-confidence. The logic of the market aims to disqualify the work of the poor and reduce them to mere *"recalculators"*.

[4] Stiglitz J., "*The Great Disillusionment*", Paris, Fayard, 2002, p. 114.

At the same time, the demands of progress that it embodies erects barriers to alternatives that might enable the excluded to engage in autonomous gainful activity. The poor person condemned to inactivity is thus forced to face the facts*: "Insofar as there is no use for his capacities in the system of valuing money capital, he is rejected, excluded, considered as non-existent*"[5] . Modernized poverty is amplified by the isolation to which it condemns its victim. The loss of relational and social capital following the loss of work leads the poor to close in on themselves. Historically speaking, those who worked were never considered poor. The label: *vagrant* was the label for those who did not want to work. Today, with the advent of modernized poverty, hundreds of millions of women and men who are willing and able to work are labelled as poor if their skills do not fit a specific and valued function in the labor market. Market fundamentalism has meant that this mismatch between the requirements of the system and the skills of the people becomes more pronounced with each technological advance, particularly in the so-called developing countries. In these same countries, the production system asks the poor farmer to invest in mass production or what is commonly called *"agro-industry" in* order to ensure the inflow of foreign currency, a *sine qua non* for the modernisation of a country. The same farmer who has always shown himself to be solvent to his community and his habits is now forced to accept what is imposed on him. The day the market decides to do without him, on the pretext that he no longer has the required qualifications, all the skills that for centuries had made individuals like him socially recognized and respected, have no more value for the community. Globalization, which Serge Latouche describes as blind, provides a good example of a technology, such as information technology, whose development is widening the gap between children with highly developed skills and others who are structurally disqualified. In human societies, the poor lived in the very existential fear of one day becoming a stranger. Above all, he feared the fact that he would find himself in a situation of isolation. But it is precisely this fear that is the daily lot of the modernized poor, who begin to have a strange perception of themselves. He suffers, in the words of Emmanuel Mounier, that *"only true misfortune which is to suffer separately, deprived of cruel fraternity and unhappy intimacy*"[6] . And even if he has access to new services and possesses infinitely more goods than the poor of vernacular societies, he remains more than ever condemned to marginalization. Ancient writings tell us that in human societies, the individual could live in dignity while being deprived of any kind of materiality. To work, even for a meagre salary, was an honor for the subject. It was a way of imposing oneself within the community. By proving his social usefulness through work, the person in question knew in advance that there would always be someone to help him in case of need. Unlike in the past, and instead of valuing human labor, the new economy tends, instead, to undervalue the labor of the poor and relegate it to ninth place on the scale of profitability. In the eyes of the system, these same poor workers only become interesting when their dependence on the needs created is profitable. For the market fundamentalists, all means are good to turn these same people, initially despised by the system, into faithful consumers of the new capitalist mode of production. Thus, the needs of a family, reduced to the simple condition of survival in the suburbs of Casablanca, now include a satellite dish, a Barbie doll, tablets, a mobile phone, a pack of Coca-Cola, enrolment of their children in a public school, etc., even to the point of over-indebtedness, in order to give their children a meagre chance of success. By instilling this way of life, the system has condemned this family to a dead-end street, where it is almost impossible to reconcile resources that are never sufficient and needs that are never met. The remarkable advances in technology and marketing are far from helping. The productive system is no longer content to transform simple desires into real needs, it plays on the management of differences in order to strip the consumer of his or her uniqueness.

[5] Gorz A., *Misère du présent, richesse du possible*, Paris, Galilée, 1997, p. 18.
[6] Rahnema M., *"Quand la misère chasse la pauvreté"*, Paris, 2003, p. 221.

The evangelists of the market often call upon the latest findings of the human sciences - anthropology, sociology, psychology and economics - to probe the secrets behind the creation of desires and their satisfaction. The behavior of the subject concerned is observed in the smallest detail. This is done in order to better identify his or her needs. The uniqueness of his or her needs is savagely broken down and disfigured. To do this, appropriate tools are used: sales, promotions, advertising, etc. The pattern is such that the consumer believes he is fully exercising his freedom by accumulating purchases, whereas his choices are dictated by what Jean Baudrillard calls*: "constraints of differentiation and obedience to a code*"[7] .

3. CONCLUSION

There is no doubt that globalization has become a gigantic exclusion machine. Despite crises, economies show a great capacity to reproduce themselves, which is unfortunately not the case for individuals. The rise of populist parties in Europe is proof of this. At a time when assistance policies have shown their limits, when reality points to a bleak future for the most disadvantaged, when market fanaticism is taking hold of the middle classes, making them more vulnerable, it is time to rethink strategies for fighting poverty. Having demonstrated their limits, public development aid must be more respectful of socio-bio-diversity and contexts since *"ill-conceived assistance automatically produces assisted people".*

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DOES SUPPLEMENTARY HEALTH INSURANCE AFFECT THE COSTS OF MEDICAL TREATMENT FOR THE CITIZENS IN THE REPUBLIC OF CROATIA?

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ABSTRACT

This research paper analyses the attitudes of the citizens in the Republic of Croatia on the impact of supplementary health insurance on medical treatment costs. The Croatian health system includes mandatory, supplementary, and additional (voluntary) health insurance. Mandatory insurance is mostly financed through a special tax on employees' salaries, while supplementary and additional health insurance is voluntary, and every Croatian citizen can decide whether there is a need for such insurance, if he or she wants to use it and pay an additional monthly, quarterly, or annual premium for it. In addition to a theoretical description of health insurance functioning, especially supplementary health insurance, this paper presents the results of empirical research. The analysis was carried out in September 2022 by a survey questionnaire. The goal was to determine is it worth it for people, regardless of their age, to pay supplementary insurance or participation on the spot after service received.

Keywords: *supplementary health insurance, healthcare financing, HZZO, participation, health institutions*

1. INTRODUCTION

Today, in European countries, we encounter different forms of organization for the providing health care services and the collection of financial resources. They can be divided into those that are financed mostly from tax revenues (Sweden, Denmark, Italy, UK) or from payments of mandatory health insurance contributions (Germany, Poland, France, Croatia). Many countries of the world, state Broz and Švaljek (2014, p. 51, in: Vehovec ed. 2014, quote Bazzolli ed. 2004), "try to make public health services available to as large part of the population as possible, and preferably to the entire population." This requires a large and widespread healthcare system that consumes a lot of public money, and because of the problems in managing such a system, inefficiencies appear. Therefore, reforms are often carried out to make the health system more efficient". In the mid-1960s of the last century, the economic profession intensified its interest in health, which is compatible with the increase in allocations for health and the impossibility of meeting unlimited health needs. The problem of health needs, which was mainly solved from the aspect of demand, that is the willingness and/or ability to seek, use, and in some conditions also pay for health services, began to be considered as a problem on the side of the offer of health services (for example: 2 hospitals, number of doctors, medicines and similar) at all levels

of health care (primary, secondary, the tertiary). On the other hand, the increasing costs of health systems have led to the need to reconceptualization of them to meet the needs of citizens. It is unquestionable that health insurance, along with pensions, is the most important element of the welfare state (Šimović and Deskar-Škrbić, 2019, online). Therefore, it is not surprising that health insurance systems and health policy are at the centre of permanent interest of the wider public (Zrinščak, 1999). Šimović and Deskar-Škrbić (2019, online) point out that "the expenditure of individual countries on healthcare and healthcare services shows the degree of economic development, but also the development of the healthcare system". However, trends in developed economies in recent decades indicate a strong growth in healthcare spending and increased expenditure for health compared to other budget items (Mihaljek, 2014; Vehovec, 2014). Combined with the trend of accelerated population aging, these trends undermine the long-term sustainability of public finances even before the outbreak of the global financial crisis in 2008 and the covid- 19 pandemic. In the territory of the Republic of Croatia, the organized healthcare system has a long tradition. Back in 1919, the then head of the Ministry of Public Health, Andrija Štampar, carried out a health reform starting from the social-medical principles of the organization of the health service and was the first one in the world to design an organized form of institutional health care with the aim of solving the problems of that time, among which were: tuberculosis, malaria, trachoma, and endemic syphilis. After the Second World War, typical problems appeared as in other developing countries, such as population migration, infectious diseases, infant mortality, but also a lack of medical personnel, which led to the centralization of the health care system. Soon, due to perceived shortcomings, it was decentralized again. Until the mid-1980s of last century, the continuous development of the medical profession and the health insurance system was recorded. The organization of the health system according to the territorial principle was replaced by a system in which citizens obtained health care according to the place of residence, work, and education. However, the initiated health reforms were stopped by the Homeland War, but the integral civil-military system managed to preserve satisfactory health indicators, and the reform was continued in 2006. At that time, the Croatian Parliament adopted the National Health Development Strategy 2006-2011, which considered the circumstances and conditions in which health care works, available science and technology, the demands and needs of the population, but also its transition. From August 21, 1993, the Croatian Health Insurance Institute (HZZO) became the holder of health insurance, which took over operations from the Republic of Croatia Health Insurance Fund. Until today, it operates under the same name with the aim that all insured persons have the same rights and obligations from mandatory health insurance according to the principle of reciprocity, solidarity, and equality, which is mostly financed through mandatory contributions from salaries. In addition to mandatory health insurance, the system offers additional and supplementary health insurance. Both are voluntary, and each citizen individually decides whether he wants and needs this type of insurance, and for which he will pay a monthly, quarterly, or annual premium. Therefore, the focus of this paper is supplementary health insurance, which covers part of the health care costs that are not covered by the contribution to the compulsory insurance at the HZZO. The aim of this work is to analyse the views of citizens of the Republic of Croatia on the impact of supplementary insurance on treatment costs, that is, to investigate whether it is worth paying for supplementary health insurance only for the elderly or whether the younger population also benefits from it. As younger patients are often in a dilemma whether they should have the "cost" of supplementary insurance all the time, or whether it is "cheaper" to pay a participation after the service received, the purpose is to analysed the collected data and draw conclusions, bearing in mind that not only illnesses occur in life, but also unwanted various injuries and that in that case, although the participation for one hospital bill may not exceed HRK 2,000, multiple visits and rehabilitation can lead to extremely high costs.

Research questions were asked:

- Research question 1.: Do persons under 35 years of age have an interest in paying for supplementary health insurance?
- Research question 2: What are the differences for the patient between supplementary and additional insurance?

1.1. Methodology and data sources

In the theoretical part of the work, data from secondary sources were used, that is from scientific research papers, professional literature, the Internet platform of the HZZO, and legal legislation in the field of health care. Methods of description and comparison were applied. In the conducted research, a survey was used as an instrument to obtain the opinions of respondents. The survey was conducted online. The link to the online survey was sent publicly in the period from September 1. until 30.09.2022. and it was completed by 257 respondents. Answers to the survey questions were statistically processed using the MS Excel computer program. Verification of the research questions was performed by calculating the Hi square test also using the computer program MS Excel.

1.2. Economic and financial goals of health care

From an economic point of view, the central problem of the health care system is the question of the efficiency of the allocation of funds intended for health (expenditure), which is very often the result of a political choice (Obadić and Tica, 2016. Relatively inelastic demand is an extremely important feature. As Santerre and Neun (2007.) state in their research that if an individual is sick and requires certain health care, they will try to buy it at almost any price. At the same time, the ability to purchase health care is limited by the income of individuals, and it is very likely that individuals who need health care will give up from spending of many other products to afford the necessary health care (Šoštarić, 2019). Precisely the high health costs are one of the reasons why you can often hear stories about the bankruptcy of persons without a health care system (more on this in: Santerre and Neun, 2007). On the other hand, authors Šimović Deskar-Škrbić (2019, online) emphasize that healthcare has all the characteristics of a private good, which can be excluded from consumption through the price of the health insurance policy, that is, they can be competitive in consumption because the number is limited, for example, of hospital beds, specialist examinations and similar. They state that "sometimes persons don't know what is good for them, so they don't want to buy certain goods and services, such as healthcare, or don't buy enough of them. Rather, they direct their disposable income to the consumption of other goods and services to maximize current well-being. Precisely because of this possibility, the state acquires and offers certain goods and services such as healthcare, even if individuals in society do not want meritorious goods" (Šimović and Deskar-Škrbić (2019, online). Therefore, one of the main economic goals in healthcare is its efficiency. The efficiency of the system is observed through the ratio of total costs and utility (welfare) produced by the system with the distribution of resources that will maximize social utility (Obadić and Tica, 2016, 475). There are two types of efficiency: operational and allocative efficiency. Operational efficiency is characterized by achieving maximum output with given resources or minimizing costs for a given level of output. While allocative efficiency implies the best use of deficient resources to achieve program goals (for example: treatment or prevention programs for a certain disease). In doing so, all costs and benefits of interventions are adequately considered, regardless of whether they are undertaken within the health system or outside it (Obadić and Tica, 2016, p. 475). In addition, as Šimović and Deskar-Škrbić (2019, online) point out, issues related to healthcare and health insurance are complicated by the fact that, as a rule, an individual has information about his health, family history of illness, his own health habits, and many other information that the insurer does not.

By concealing these facts, he can get a cheaper policy and pass on the higher cost of treatment to the insurer. It is also possible that the individual may not have the right knowledge about his illness and which medical procedure would suit him. The doctor, as the person who needs to solve that problem, is also the person who sells the treatment service through the insurance company (Šoštarić, 2019). The doctor can also sell some services that the person may not need, all to charge a higher amount. In conclusion, mediating factors that determine the formation of health systems and their current transformation can be highlighted, such as:

1) economic framework: the economic possibilities of society and the allocation rate for the health care system, changes in the field of work and employment and methods of financing health care systems, the relationship between public and private in the health care system, differences between the rich and the poor, the issue of cost control and rationalization, the impact of technological development to increasing health care costs,
2) demographic trends: reduced birth rate, fertility and mortality, aging of the population and, related to this, better health status and increased expectations of health care in old age, changes in family structure, especially increased economic activity of women, growth of single-parent and single-parent families and the dying out of the social functions of the extended and nuclear family,
3) epidemiological trends: epidemiological transition that differentiates the causes of illness and mortality, new types of diseases and the question of the relationship between social and health status, especially the facts about the increase in health inequalities in the modern world,
4) Social context: cultural and social differences between certain countries and certain social groups, types of diseases related to life and health styles, the way in which the individual and society respond to the occurrence of diseases and
5) state organization: the way the state intervenes in the health sector, the degree of administrative involvement and administrative control, interests, and positions of power in and around the health system, ways of decision-making and citizen participation in the health system (Zrinščak, 1999).

On the other hand, the goal of financing the health system is primarily to provide funds for health care so that insured persons have appropriate access to individual health services. In the Republic of Croatia, contributions for compulsory health insurance are mandatory for all employed persons and employers. Dependent family members are insured through their household members who exercise their rights from a regular employment relationship. Self-employed citizens personally pay contributions for mandatory health insurance. Vulnerable groups of the population, such as elderly pensioners and persons with low incomes, are exempted from paying contributions. A certain part of the population supplements their basic insurance by paying additional health insurance with commercial insurers, which is not offered by HZZO. As additional coverage, HZZO offers the option of supplementary health insurance for a fixed monthly fee of HRK 70 (9,28 EUR), regardless of the income class in which the insured citizen is located. HZZO covers the costs of health risks at the level of 80% within the "basket of services" covered by mandatory health insurance, which includes the right to primary health care, specialist - advisory health care, hospital health care, the use of medicines that are on the list of HZZO- and the use of health care abroad, dental-prosthetic services, prostheses, and orthopaedics' and other tools. The rest of the cost of services (20%) must be paid by the insured person, and this amount defray by the insured person is not allowed to exceed HRK 2,000 (265,25 EUR) per hospital bill. Contracting of health care carried out by HZZO, is a procedure in which the funds invested in the provision of health care are directly linked with the expected result. The basic instruments used to achieve the desired effects through contracting are the method of financing (payment) of health services and the mechanisms of

control of the provision of health services. The way health care is financed affects the motivation of health care providers and their behaviour patterns, because with all payment methods there is a tendency to increase payment units and decrease the cost per payment unit. At this moment in the Republic of Croatia, there are several ways of financing health care, depending on the level of health care and activity. Primary health care is paid through the amount per insured person/resident, through a standard team and diagnostic-therapeutic procedures, and in general family medicine and dental health care, additional funds can be obtained by participating in the work of the general/dental medicine centre and through the implementation of preventive programs contracted with the health centre. Out-of-hospital specialist-advisory health care is paid for based on the List of diagnostic and therapeutic procedures in healthcare (Blue Book) and diagnostic-therapeutic procedures.

2. STRUCTURAL CHARACTERISTICS OF THE CROATIAN HEALTH SYSTEM

The Law on Compulsory Health Insurance establishes the rights and obligations of insured persons in the use of health care and other rights from health insurance. Health insurance is mandatory and is provided through the Croatian Institute for Health Insurance (HZZO). The basis for acquiring the status of an insured person is determined by law (employment in the country or abroad, trade and agriculture, receiving a pension, disability benefits, unemployment, ownership of a private company, etc.). The right to health insurance can also be achieve based on valid international agreements on social insurance. Those who are obligate to pay contributions (insured persons personally or their employers, etc.) pay a contribution for compulsory health insurance as a percentage of the base, which consists of, for example, income, and which is determined by the competent tax administration. The Croatian health system is based on two basic principles of health policy:

- EFFICIENCY - as a ratio of output to input (that is, successful use of resources) and
- JUSTICE - every individual receives the same health service for the same health need

As there was a large increase in health spending, the health system, which financed 100% of health services until 2002, had to implement a reform, and mixed financing of health insurance was introduced:

a) Basic (national) and
b) Voluntary (supplementary, additional, and private).

2.1. Mandatory health insurance

Compulsory health insurance is carried out by the Croatian Health Insurance Institute (HZZO), and all persons residing in Croatia must be insured. Compulsory health insurance provides all insured persons with rights and obligations from compulsory health insurance based on the principles of reciprocity, solidarity, and equality. It is implemented by the Croatian Health Insurance Institute (HZZO). Rights from compulsory health insurance are the right to health care and the right to financial benefits. Based on the Law on Health Care, health care is performed at the primary, secondary and tertiary levels and at the level of health institutes. Health care from compulsory health insurance at the primary level is obtained by the insured persons of the Institute based on a free choice of a Doctor of Medicine and a doctor of dentistry, as a rule, according to the place of residence, and according to the provisions of the general acts of the Institute. Health care from the compulsory health insurance at the secondary and tertiary level is obtained by the insured persons of the Institute based on a referral from the selected contract doctor of primary health care. Health care from compulsory health insurance at the level of health institutes is provided at the primary, secondary and tertiary levels of health care and through special programs.

2.2. Voluntary health insurance

Voluntary health insurance provided by HZZO is supplementary health insurance. By applying the Law on Compulsory Health Insurance, insured persons are obliged to bear part of the costs of health care - part of the price of the health service. It is a form of health insurance that provides insured persons the payment of the difference between the amount of health care costs covered by mandatory health insurance up to the full value of the cost of the health care service. Supplementary health insurance is voluntary and personal health insurance and is taken out for a certain period. Rights from supplementary health insurance can be achieved by presenting an identity card and by decision on the type and price of the supplementary health insurance policy of the Croatian Institute for Health Insurance the price of the policy is determines. In addition to HZZO, supplementary insurance is also carried out by private insurers.

2.3. Supplementary health insurance

Supplementary insurance in a way complements the mandatory health insurance. It covers the costs of participating in the health care costs (participation) of the insured person when using all types of health care - from hospital and ambulatory treatment to diagnostic procedures in the hospital, orthopaedics' tools, and specialist dental services to physical rehabilitation at home and treatment abroad. Supplementary health insurance can be chosen only by persons who have established the status of an insured person in the compulsory health insurance with the HZZO. With the concept of solidary and sustainable public health care with the same price for all categories of the population, its "supplements" mandatory health insurance in such a way that it covers the costs of participating in the costs of health care (participation) of the insured when using all types of health care prescribed by that law. The status of the health care you receive at the hospital or at a doctor's office has nothing to do with whether you have a supplementary insurance policy. Do not compare our health insurance with American examples - in accordance with the rights from compulsory insurance, every citizen of the Republic of Croatia has the right to the same level of health care in all health institutions that are part of the HZZO system (state hospitals, general practitioners, etc.).

2.4. Additional health insurance

Additional insurance is a type of voluntary health insurance that implies the use of options above the standard, that is, above what is prescribed by the Law on Compulsory Health Insurance. As such it excludes supplementary health insurance and is a completely different category of insurance. Additional health insurance can be arranged with insurance companies. HZZO does not currently offer or contract additional health insurance. When the insured person has contracted supplementary health insurance, he or she has insured also a complete 'standard' health care. And when the insured person has contracted additional insurance, he or she has health care under more favourable and better conditions (for example, accommodation, food, and service). Beneficiaries of additional insurance also have the right to use the services of diagnostic processing, specialist tests and performing laboratory tests. With additional insurance, the standard and policy prices/premiums are significantly higher than with supplementary insurance. The average price of basic policies is from HRK 500 to HRK 1,000.

3. SURVEY RESEARCH OF THE INFLUENCE OF SUPPLEMENTARY INSURANCE ON TREATMENT COSTS

The research was conducted through an Internet survey of arbitrary respondents with the aim of investigating the views of citizens on the impact of supplementary insurance on treatment costs. The survey consisted of 17 questions. 257 respondents answered the survey. The largest response of survey participants was permanently employed women with a high school education from Zagreb.

Not a single respondent answered the survey from the Bjelovarsko-bilogorska, Ličko-senjska, Virovitičko-podravska, Požeško-slavonska, Šibensko-kninska, Vukovarsko-Srijemska and Međimurska counties. The collected data were analysed and statistically processed using the computer program MS Excel. The data of dependent and independent variables were calculated and compared. Verification of the research questions was performed by calculating the Hi square test. The survey questions are divided into those related to the independent research variables and those related to the dependent research variables. Independent variables were used to collect data on the subjects (gender, age, education, work, and marital status, when and why they use medical services, whose policy they use, whether they know what is covered and what the price depends on). Questions related to independent variables:

1) What is your gender?
2) What is your age?
3) What is your professional qualification?
4) What is your work status?
5) What is your marital status?
6) In which county of the Republic of Croatia do you live?
7) With what need do you go to the doctor?
8) Which of the medical services do you use most often?
9) Whose supplementary health insurance policy are you using?
10) Do you know that the amount of the supplementary insurance policy is paid according to certain censuses?
11) Do you know that the amount of the supplementary insurance policy depends on what it covers?

The second part of the survey questions consisted of six questions related to supplementary insurance. The survey participants expressed their views on whether it is worth paying a participation or having a supplementary insurance policy, whether it is worthwhile for young persons to pay supplementary insurance, whether they know what a supplementary insurance policy covers, whether they feel safe by having supplementary insurance, whether stress affects the health of young persons and finally, whether supplementary insurance is even justified considering the amount allocated for mandatory health insurance. The questions related to the dependent variables are:

1) Do you think it is more profitable to pay participations in a health care institution compared to supplementary insurance?
2) Do you think that it is more worthwhile to have the security of supplementary insurance compared to participation?
3) Do you think that young persons do not get sick to such an extent that it is worthwhile for them to regularly pay supplementary health insurance?
4) Do you think you know what the supplementary insurance policy covers?
5) Do you think that young persons also need the security of supplementary health insurance due to their stressful lifestyle?
6) Do you consider it justified to pay for supplementary insurance regardless of the amount set aside for mandatory health insurance?

The participants expressed their views using the given wording: I completely agree, I mostly agree, I can't decide (partially agree and partially disagree), mostly I disagree, and I don't agree at all. By comparing dependent and independent variables, results were obtained about the attitudes of the examinees.

3.1. Analysis of the results of the survey research conducted

The questions related to the independent variables were for the purpose of getting to know the respondents regarding to gender, age, employment, and place of residence, as well as the supplementary policy and visits to the doctor. The questions related to the dependent variables show how informed the population is about who, what, how and for what price offers supplementary insurance services and whether it is worthwhile to have supplementary insurance and how justified it is to pay for supplementary insurance in view of monthly allocations from income for compulsory health insurance. The largest number of participants in the conducted survey were women - 190 out of 257 surveyed (73.9%). Most respondents are aged 26-35 (30.4%). They are followed by respondents aged 36-45 with 26.8% and 18-25 years of age with 18.2% of the total respondents. If we look at the respondents according to their professional qualifications, most respondents have secondary vocational qualifications, 57.6%, followed by baccalaureus degrees or sciences with 22.2% and masters of professions or sciences with 17.1%. If the respondents are observed according to their employment status, permanent employees predominate, 71.2% of them, 8.9% students, and 5.5% unemployed persons, which makes the sample very representative for the purpose of the research objectives. If the marital status of the respondents is analysed, married respondents predominate (48.2%), followed by unmarried with 23.7% and those who are in a long-term relationship with 18.7%. The analysis of respondents according to their state of health, i.e., need, showed that 58.4% of all respondents use health services as needed, while 31% rarely use them. Considering the sample of respondents and their age, this is to be expected. If the services most used by the respondents are analysed, the services of examination by a primary care doctor are the most used, 45.9% of them, followed by the dispensing of medicines with 45.1% and dental examinations with 30.7%. If the respondents are observed according to their opinion, whether it is worth paying a co-payment more compared to supplementary health insurance, 36.2% of the respondents agree and disagree with this statement, so it is undecided. The above observation is very indicative and would require a deeper analysis of the causes of such an attitude. Furthermore, 23.7% of respondents believe that it is not worth paying a co-payment in relation to supplementary health insurance. The analysis of respondents' opinions on which supplementary health insurance or co-payment is more useful also showed the indecision of most respondents, 34.2% of them, while in this case 28% agreed with the statement that the benefit of supplementary health insurance compared to co-payment is greater. When asked whether it is worth having supplementary health insurance, especially for younger people, the analysis showed that 31.9% were also undecided and agreed and disagreed with that statement. 20.6% of respondents believe that even younger people get sick and prefer to pay for supplementary health insurance. Furthermore, the analysis of respondents' preferences towards health insurance policy issuers showed that HZZO enjoys the highest trust, followed by Croatia osiguranje d.d. and many of respondents who do not have supplementary health insurance at all. If the respondents of the survey are observed according to their knowledge about the censuses according to which supplementary health insurance policies are paid, 26% of them are not sure of their knowledge, 23.3% know completely, and 20.2% mostly know, that is, they have the necessary information on which to base your decisions. Also, the analysis showed that 35.8% of respondents mostly know what the supplementary health insurance policy covers, but also that 26.8% of them are not sure that they have the necessary knowledge.

Table following on the next page

	I believe that it is more worthwhile to pay a participation compared to the Supplemental Insurance											
I go to the doctor: Gender:	I both agree and disagree		I completely disagree		I agree completely		I mostly disagree		I mostly agree		Grand total	
Age:	participants	%	participants	%	participants	%	participants	%	participants	%	participants	%
Very often	**1**	**0,39**	**7**	**2,72**							**8**	**3,11**
Male			**2**	**0,78**							**2**	**0,78**
26 - 35 years			1	0,39							1	0,39
46 - 55 years			1	0,39							1	0,39
Female	**1**	**0,39**	**5**	**1,94**							**6**	**2,33**
18 - 25 years	1	0,39	1	0,39							2	0,78
26 - 35 years			1	0,39							1	0,39
46 - 55 years			3	1,17							3	1,17
Never	**6**	**2,33**	**1**	**0,39**	**1**	**0,39**					**8**	**3,11**
Male	**2**	**0,78**			**1**						**3**	**1,17**
18 - 25 years	2	0,78									2	0,78
36 - 45 years					1	0,39					1	0,39
Female	**4**		**1**	**0,39**							**5**	**1,94**
18 - 25 years	1	0,39									1	0,39
26 - 35 years	2	0,78									2	0,78
36 - 45 years	1	0,39									1	0,39
46 - 55 years			1	0,39							1	0,39
Sometimes	**3**		**2**		**4**		**2**				**11**	**4,28**
Male			**1**		**2**						**3**	**1,17**
18 - 25 years					2	0,78					2	0,78
36 - 45 years			1	0,39							1	0,39
Female	**3**		**1**	**0,39**	**2**		**2**				**8**	**3,11**
18 - 25 years	2	0,78					1	0,39			3	3,11
26 - 35 years	1	0,39									1	0,39
36 - 45 years			1	0,39	1	0,39					2	0,78
46 - 55 years					1	0,39	1	0,39			2	0,78
As needed	**50**		**35**		**11**		**38**		**16**		**150**	
Male	**12**	**4,67**	**5**	**1,94**			**11**	**4,28**	**3**	**1,17**	**31**	**12,06**
18 - 25 years	7	2,72	1	0,39			2	0,78			10	3,89
26 - 35 years	1	0,39	3	1,17			4	1,56	3	1,17	11	4,28
36 - 45 years	2	0,78					2	0,78			4	1,56
46 - 55 years	2	0,78					3	1,17			5	1,94
65 and more			1	0,39							1	0,39
Female	**38**	**14,79**	**30**	**11,67**	**11**	**4,28**	**27**	**10,51**	**13**	**5,06**	**119**	**46,30**
18 - 25 years	7	2,72	4	1,56	3	1,17	3	1,17	1	0,39	18	7,00
26 - 35 years	9	3,50	10	3,89	3	1,17	5	1,94	4	1,56	31	12,06
36 - 45 years	12	4,67	6	2,33	5	1,94	9	3,50	3	1,17	35	13,62
46 - 55 years	8	3,11	6	2,33			4	1,56	5	1,94	23	8,95
56 - 65 years	2	0,78	4	1,56			6	2,33			12	4,67
Rarely	**33**		**16**		**15**		**10**		**6**	**2,33**	**80**	**31,13**
Male	**10**	**3,89**	**9**	**3,50**	**4**	**1,56**	**5**	**1,94**			**28**	**10,89**
18 - 25 years	4	1,56			1	0,39	3	1,17			8	3,11
26 - 35 years	2	0,78	5	1,94	1	0,39	1	0,39			9	3,50
36 - 45 years	4	1,56	2	0,78	2	0,78	1	0,39			9	3,50
46 - 55 years			2	0,78							2	0,78
Female	**23**	**8,95**	**7**	**2,72**	**11**	**4,28**	**5**	**1,94**	**6**	**2,33**	**52**	**20,23**
18 - 25 years			1	0,39			1	0,39			2	0,78
26 - 35 years	10	3,89	2	0,78	6	2,33	1	0,39	3	1,17	22	8,56
36 - 45 years	6	2,33	2	0,78	3	1,17	2	0,78	3	1,17	16	6,23
46 - 55 years	3	1,17	1	0,39	2	0,78	1	0,39			7	2,72
56 - 65 years	4	1,56	1	0,39							5	1,94
TOTAL:	**93**	**36,19**	**61**	**23,74**	**31**	**12,06**	**50**	**19,45**	**22**	**8,56**	**257**	**100**

Table 1: Analysis of opinions on whether it is worth paying a participation in relation to supplementary insurance
(Source: Systematization by the authors)

According to the research, the most often women visit the doctor "as needed" between 36-45 years, but even 93 respondents (36.19%) do not have a definite opinion on whether it is worth paying the participation, while 61 respondents (23.74%) do not agree with the statement that it is more worthwhile to pay the participation. Out of 257 respondents, only 22 respondents (8.56%) agree that it is better to pay a participation than to have supplementary insurance.

I think it's because of a stressful lifestyle and young people need security Supplementary health insurance:	GENDER:					
	Male	%	Female	%	Grand total	%
I both agree and disagree	18	7,00	40	15,56	58	22,57
Unmarried/unmarried	5	1,94	9	3,50	14	5,45
Disassembled/disassembled			2	0,78	2	0,78
In a long-term relationship	8	3,11	5	1,94	13	5,06
Married	5	1,94	24	9,34	29	11,28
I completely disagree	2	0,78	4	1,56	6	2,33
Unmarried/unmarried	1	0,39	1	0,39	2	0,78
In a long-term relationship			1	0,39	1	0,39
Married	1	0,39	2	0,78	3	1,17
I totally agree	22	8,56	74	28,79	96	37,35
Unmarried/unmarried	11	4,28	16	6,23	27	10,51
Disassembled/disassembled			7	2,72	7	2,72
In a long-term relationship	2	0,78	13	5,06	15	5,84
Married	9	3,50	35	14,01	44	17,12
Widow/widower			3	1,17	3	1,17
I mostly disagree	3	1,17	23	8,95	26	10,11
Unmarried/unmarried	1	0,39	3	1,17	4	1,56
Disassembled/disassembled	1	0,39	1	0,39	2	0,78
In a long-term relationship			4	1,56	4	1,56
Married	1	0,39	15	5,84	16	6,23
I mostly agree	22	8,56	49	19,07	71	27,63
Unmarried/unmarried	5	1,94	9	3,50	14	5,45
Disassembled/disassembled			6	2,33	6	2,33
In a long-term relationship	10	3,89	5	1,94	15	5,84
Married	7	2,72	25	9,73	32	12,54
Widow/widower			4	1,56	4	4,56
Grand total	**67**	**26,07**	**190**	**73,93**	**257**	**100**

Table 2: Analysis of opinions by gender and marital status on whether young people should pay for supplementary health insurance
(Source: Systematization by the authors)

The analysis showed that married women, 35 respondents (14.01%) most completely agree that supplementation is necessary, as well as those who mostly agree, 25 of them (9.73%). Most unmarried men 11 (4.28%) completely agree, and those in a long-term relationship mostly agree - 10 of them (3.89%). In conclusion, the observation can be made that most respondents are aware of the need to pay for supplementary health insurance.

3.2. Verification of research questions

The research questions were verified by conducting the Hi-square test. Each research question was verified by first transforming it into the form of a hypothesis. Based on the hypothesis, a null hypothesis was derived in such a way as to assume the expectation that the response frequencies should be according to a normal Gauss distribution. Since the Hi-square test is most often used in cases where qualitative data is involved or if the distribution of these data deviates significantly from normality, its application is justified. The Hi-square test was used to determine whether there is a statistically significant difference in the (empirical) frequencies compared to the expected (theoretical) frequencies. The null hypothesis represents the distribution of expected frequencies (answers to survey questions) according to a normal (Gauss) distribution. Calculation of Hi-square tests and analysis of the provability of both hypotheses derived from the research questions are discussed below. The research question: "Do people under 35 years of age have an interest in paying for supplementary health

insurance?" is transformed into hypothesis H1: "People under 35 years of age have an interest in paying for supplementary health insurance." The null hypothesis of hypothesis H1 assumes the expectation that the frequencies of responses to the survey question should be consistent with a normal (Gauss) distribution. Out of a total of 257 survey participants on the 10th question: "I think it's more worthwhile to pay for supplementary insurance compared to participation" they answered as follows: 93 of them completely agree, 61 mostly agree, cannot decide (partially agree and partially disagree) 31 participants, 50 of them mostly disagree, and 22 of them do not agree at all with the stated statement. Using the Hi-square test for hypothesis H1, the result $\sum Hi^2$=842,708 was obtained. The critical value is 13,277. The value of the Hi-square test is greater than the marginal frequency. The observed frequency is statistically significantly different from the expected frequencies and show that the null hypothesis of the hypothesis H1: Persons under 35 years of age are not interested in paying supplementary health insurance, can be undoubtedly denied, and we can conclude from the above statement that the hypothesis H1: "Persons under 35 years of age are in the interest of paying supplementary health insurance." can be considered undoubtedly accepted.

	I completely agree	**I mostly agree**	**I both agree and disagree**	**I mostly disagree**	**I completely disagree**	**Total**
observed (empirical) value (fe)	93	61	31	50	22	257
formula for calculating expected value (ft)	total x 0,0359	total x 0,2384	total x 0,4514	total x 0,2384	total x 0,0359	
expected (theoretical) value (ft)	9,23	61,27	116,01	61,27	9,23	257
difference (deviation) (fe-ft)	83,77	-0,27	-85,01	-11,27	12,77	
square of deviation (fe-ft)2	7018,03	0,07	7226,67	126,99	163,17	
HI Square (fe-ft)2 /ft	760,66	0,00	62,29	2,07	17,69	**842,708**
significance	1%					
degree of freedom	**4**	**HI square > from the marginal value →null hypothesis is**				**REFUTATED**
limit value	**13,277**	**by which the initial hypothesis is**				**CONFIRMEND**

Table 3: Calculation of the Hi2 test assuming expected values distributed according to a normal (Gauss) distribution
(Source: Systematization by the authors)

4. CONCLUSION

The research questions placed in this paper were verified by conducting the Hi-square test. It has been confirmed that for persons under the age of 35 are worth paying for supplementary health insurance. The research showed that despite being informed, respondents do not have enough relevant information on which to make decisions and that permanent education is necessary. Given the fact that most respondents in the age group of 26-35 joined the survey, it is expected that this age group uses the most common health services (20.23%) and that from the area of the city of Zagreb. They are followed by persons between the ages of 36 and 45 (13.23%), and respondents aged 18-25 from the city of Zagreb (9.34%). The presented data prove that the younger population also needs medical help and care and that they use health services, which entails the payment of participation, i.e., the need to pay supplementary

insurance. An analysis of opinions on whether it is worthwhile to pay a participation after the service is provided or is more profitable to contract supplementary insurance, only 8.56% of respondents believe that it is more profitable to pay a participation in relation to supplementary health insurance. If the respondents' opinion is analysed according to gender and marital status, whether young persons should pay for supplementary health insurance, the research showed that most respondents are aware of the importance of paying for supplementary health insurance. The fact is that the disease is not reserved only for the elderly and powerless, and it is necessary to have some security in the form of supplementary health insurance.

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ECONOMIC ASPECTS OF RARE DISEASES: UNEQUAL ACCESS TO BENEFITS FROM RESEARCH ADVANCEMENTS.

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ABSTRACT

Rare diseases (RDs) differ from common diseases in many ways. Specific aspects relate to the impact on patients' lives, treatment and access, and the impact on healthcare budgets and society. This article aims to provide an overview of the various economic aspects associated with RDs. The total number of applications submitted, orphan designations and authorisations granted by the European Medicines Agency has risen in the last 20 years. The growing number of new orphan drugs (ODs) has created growing pressure on limited public healthcare budgets. Various criteria need to be considered during decision-making on whether to reimburse certain ODs. Standard types of economic analyses used in healthcare may prove inappropriate for ODs. The scientific literature and most international health technology agencies prefer granting them a special status and using a separate or modified review process in their assessment. Progress in the treatment of RDs does not automatically convert into greater availability. Access to ODs varies between European countries. In particular, Central and Eastern European (CEE) patients have considerably limited and delayed access compared to other European countries.

From the perspective of the entire public, the impact of RDs might not seem high due to their low prevalence, but per-patient costs are considerably higher. Overall, the economic burden of RDs is high, impacting not only healthcare spending but also the economy due to the productivity losses of patients and their caregivers. Access to treatment is indispensable to reducing this burden.
Keywords: *Rare diseases, Europe, Orphan drugs, Health technology assessment*

1. INTRODUCTION

Rare diseases (RDs) are those occurring rarely in a population. Regulation (EC) No 141/2000 of 16.12.1999, point 5 on orphan medicinal products (OMPs), defines rarity as a prevalence of not more than 5 persons per 10,000 inhabitants (1). With a European population of around 750 million, 375,000 people may have an RD. According to the Orphanet database, more than 6,150 RDs exist (2). Their prevalence varies between diseases and is often much lower than the official definition. Most RDs affect only dozens to a few thousand patients (3). RDs carry many burdens. Patients with RDs report worse health-related quality of life (i.e. how they perceive their physical, mental and social health) compared to patients with chronic but not rare conditions (4). Only a few RDs are preventable or treatable, and most are chronic and lead to premature death (5). They often lead to a reduction in patient participation in society and the need for patient care. Patients' families are impacted by RDs as well, not only mentally but also financially. The correct diagnosis usually takes time and requires several examinations, tests and visits to various specialists, often in different locations. The RD with the longest time to correct diagnosis has been identified as Ehlers–Danlos syndrome, where 50% of patients within the Eurordis survey stated that it took them at least 14 years to receive a diagnosis. Overall, 40% of patients in the survey said their initial diagnosis was incorrect (6). Misdiagnosis is associated with many negative effects in the form of possible deterioration of the clinical condition, effects on the patient's mental health and ineffective use of healthcare financial resources. Once an RD diagnosis is made, treatment is often extremely expensive and, in some cases, not reimbursed through the public insurance system. Their low prevalence in the population leads to significant problems, such as a lack of expertise about individual diseases, a lack of specialists, therapeutic procedures and drugs, and feelings of loneliness or isolation. More than 90% of RDs do not yet have approved treatments (7). RDs are characterised by high heterogeneity and complexity, and data-based clinical practice is a specific barrier in the field. The identification of patients in health information systems is challenging due to insufficient data on the history of RDs. This study aims to provide a comprehensive and current overview of the various economic aspects associated with RDs, especially in European countries. In subchapter 2.1, we focus on developments in ODs over the last two decades. Subchapter 2.2 discusses the methods of evaluating ODs used in different European countries, patients' access to these drugs and the impact of ODs on national budgets. In subchapter 2.3, we present the results of scientific studies aimed at calculating the total economic and social costs of RDs.

2. ORPHAN DRUGS

ODs are used to treat RDs. Given the low number of patients with a particular RD and thus the lack of motivation of the pharmaceutical industry to develop ODs under normal market conditions, certain benefits are provided to manufacturers of ODs. These include the exclusive right to trade for up to 10 years, scientific advice on protocols during the research and development of these medicines, and fee discounts and access to EU grants (1). To obtain an 'orphan designation' or orphan status, a medicinal product must be assessed by the Committee for Orphan Medicinal Products. Marketing authorisation also requires an assessment by the Committee for Medicinal Products for Human Use, which must already meet the same standards of safety and efficacy as all medicines evaluated by the European Medicines Agency

(EMA). EMA authorisation means that the product can be sold in all EU markets. The drug's actual availability and reimbursement in each country depend on several factors, which vary from country to country. The number of OD approvals has grown over the last 30 years (8). According to the available data, the number of applications submitted annually to the EMA is also increasing (Figure 1). From 2000–2005, 548 applications were received, and 343 designations and 22 authorisations were granted. From 2015–2020, the number of applications and designations more than doubled, and the number of authorisations quadrupled (9, 10).

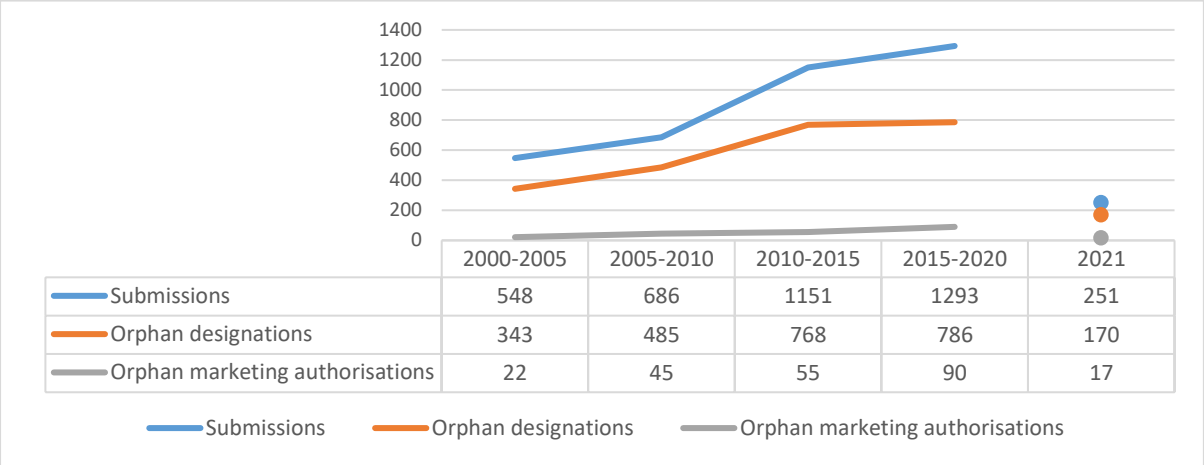

Figure 1: Number of applications submitted to EMA, orphan designations and marketing authorisations by EMA
(Source: EMA data)

According to the EMA, 12% of the total number of products with orphan designations over the last 20 years (2000–2020) were for paediatric use, 30% were for adults and 58% were for both. Of the total number of ODs, 48% were for the treatment of diseases occurring in 1–3 people out of 10,000, and 40% were for the treatment of diseases affecting less than 1 person per 10,000. Medicines that have received marketing authorisation have been designed to treat 133 different diseases. The highest share is represented by antineoplastics. In terms of the size of companies developing medicines, large companies have dominated. In 2021, they accounted for 68% of all applications for authorisation, and in 2020, they accounted for 77% (11). Clinical trials to test ODs are highly prone to bias and often lack sufficient weight for a definitive response. They are complex due to high heterogeneity, even within a single disease (12, 13). Difficulties exist in selecting clinically relevant outcomes and adapting clinical trials to small populations (14). Randomised clinical trials were conducted in only 38 of the 63 medicines authorised by the EMA between 2000 and 2010. One third of the medicines were tested in studies with less than 100 patients, and more than half were tested in studies with 100–200 patients. Around 40% of clinical trials have lasted less than one year (12).

3. ACCESS TO ORPHAN MEDICINES AND THEIR BUDGETARY IMPACT

The growing number of new drug authorisations may consequently represent a growing burden on public health budgets. The decision about whether a medicine will be reimbursed through public insurance is usually preceded by pharmacoeconomic analysis. The most common types of economic analysis in healthcare are cost-utility and cost-effectiveness analyses (15). However, ODs do not achieve good cost-effectiveness standards by default. The scientific literature favours granting them a special status by using other assessment methods compared to conventional medicines, extending standard pharmacoeconomic methods and using more criteria in their evaluation (16,17).

Among the factors that should be considered are the innovative nature of the drug, the nature of the population, the financial burden of the disease, a significant improvement in life expectancy and the impact on specialist services. Input from patients or doctors is important in the evaluation of ODs as well (18). Among the factors that countries consider when evaluating drugs for very RDs, the so-called 'ultra-ODs', are the rarity and severity of the disease, the lack of alternatives, the budgetary impact, the clinical effectiveness of the drug, ethical factors, the right of each individual to access certain minimum health care treatments, and the impact on the quality of life of patients and their caregivers (19). The assessment methods that underpin OD reimbursement decisions vary between countries. Well-established health technology agencies (HTAs), such as those in Canada, Australia, New Zealand, Germany, France and the US, have modified or separate review or application processes for ODs. (20) Some countries have special evaluation programmes for ultra-ODs. In the UK, the National Institute for Health and Care Excellence uses the highly specialised technologies programme for very RDs. The criteria include, for example, the nature of the disease, the impact of new technology, health system costs, technology value for money and technology impact outside the direct health effects (21). For ODs, the single technology appraisal process takes 93 days longer than for conventional drugs, and ODs receive negative final recommendations more often than when they are evaluated through the highly specialised technologies evaluation process (22). In 2016, Kawalec et al. found a higher share of reimbursed drugs in countries that applied special criteria in the evaluation of ODs (23). When countries implement HTAs, the results may not be binding. For example, in Slovakia, the number of positive recommendations agreed with the final decision for all drugs, but in Poland, five of the 12 drugs that received a negative evaluation were subsequently reimbursed anyway (24). However, this is not the case only in CEE countries; low agreement between recommendation and reimbursement decisions was identified also in Germany (25). Another study identified Poland and the Netherlands as countries with the highest shares of reimbursed ODs with a negative HTA recommendation. This study also found that on average, 5.4% of ODs and 11% of ultra-ODs were reimbursed without any assessment by any HTA (23). A comparison of patients' access to ODs across the 22 EU countries between 2005 and 2014 concluded that the highest availability of these medicines was in Germany and the UK, where patients had access to 91% and 85% of the 112 medicines for RDs authorised in the EU. In Italy, France, Sweden and Norway, patients had access to 60–70% of these drugs. Greece, Bulgaria, Romania and Croatia belonged to the last category, where access to ODs was significantly limited (only 27–38%) (25). Germany's top position was confirmed by further studies (27, 28). The exact percentages for other countries may vary, but several studies confirm that RD patients from Western European countries have access to more than 50% of available treatment (25, 27, 28). The average share of reimbursed oncology ODs in CEE countries was 29%. According to Malinowski at el., the lowest share was identified in Latvia (11%) and the highest in Poland (42%) (28). An analysis that focused on biotech orphan products in CEE countries identified the highest availability of reimbursed medicines in Hungary and Greece. Conversely, the worst access was in Macedonia and Estonia (only one drug reimbursed), followed by Romania and Serbia (two drugs reimbursed) (24). When comparing access to ODs in selected Balkan countries, Serbia and Montenegro had the lowest number of not only reimbursed drugs but also registered drugs (26% and 8.6% of EMA-registered, respectively). Within the Balkan countries, those with the best access were Greece and Slovenia (29). Among certain Eurasian countries, Armenia was identified as a country with no reimbursement of ODs (30). However, different studies may yield different results due to the choice of the type of indicator, methodology and source of data. Figure 2 depicts the availability of orphan medicines in the Visegrad Group (V4) countries. Availability is represented by five different indicators, each of them pointing to a different leading country in the V4 group (Figure 2).

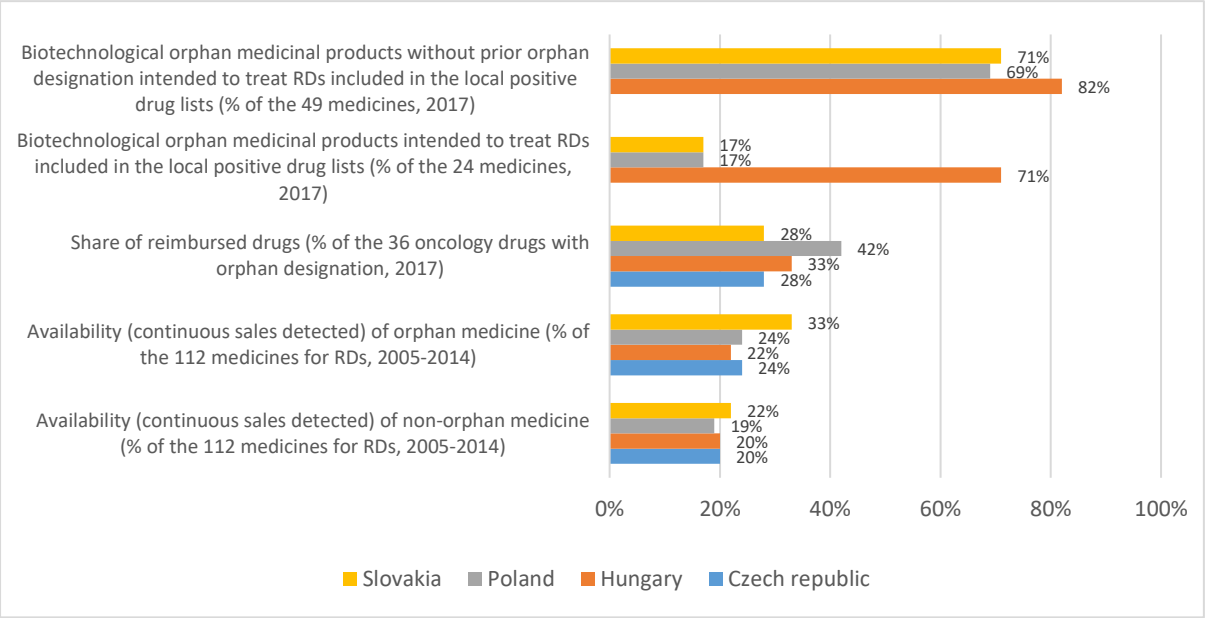

Figure 2: Different approaches to the availability of medicine for RDs (Source: Detiček et al. 2018, Kamusheva et al. 2018, Malinowski et al. 2020)

Cross-country differences were also identified when monitoring how quickly patients could acquire certain orphan medicines. Germany again ranked first among EU countries, followed by the UK, Sweden, Norway and Switzerland. In Germany, the median time of the first continuous use was three months after authorisation. The average time for continuous use within EU countries was 18 months (25). In CEE countries, it was approximately 20 months (26).

4. QUANTIFICATION OF RARE DISEASE IMPACTS

ODs are often among the most expensive drugs. According to data from Turkey, one OD accounted for 2.3% of the total drug costs (31). The cost of ODs as a percentage of total drug costs was 8% in Germany and 3% in the Czech Republic (25). Data from the Netherlands showed that only five ODs accounted for up to 57.7% of the total OD expenditure (32). In Latvia, only one orphan product accounted for 34% of the total OD expenditure (33). Right-skewed distribution of the medical costs of RDs is also evidence of a small number of patients accounting for extremely high costs (34). The share of ODs in total pharmaceutical expenditure in Europe increased from 3.3% in 2010 to 5% in 2020 (35). A study based on data from selected European countries showed a compound annual growth rate of OMP expenditure from 2010–2018 of 16% (36). Due to the high prices of medicines for the treatment of RDs, their impact on the public budget must be monitored. Different perspectives provide extremely different results. From the perspective of the entire population, the impact on the health budget might not seem high, but from the point of view of individual patients, the costs are unbearable. A meta-analysis of studies on the impact of OMPs covering nine EU countries and the UK identified the highest annual cost of OMP per person in France (€16) and the lowest in Latvia (€1.32), with the highest annual cost of OMP per patient in Germany (€1.6 million) and the lowest in Latvia (€27,811) (37). The median annual cost of ODs per patient in Europe was €32,242 (estimated for 2010–2020, per year) (35). Significant differences were also confirmed by a more recent study based on data from 19 EU countries, Norway, Switzerland and the UK. The annual cost of ODs was the highest in Germany (€32 per capita) and the lowest in Greece (€0.2 per capita), followed by Poland, Hungary, Romania, Croatia and the Czech Republic (25).

Reimbursement of expensive ODs is a significant problem in countries with already low resources available for healthcare funding. Within CEE countries, the highest costs for ODs (specifically biotechnological orphan products) adjusted for population were in Slovakia, Croatia, Greece and Bulgaria, and the lowest were in Macedonia, Serbia and Estonia. (24). RDs come with higher healthcare costs, higher costs associated with the loss of productivity of the patient and those caring for them, and higher mortality costs (i.e. costs associated with premature death). A meta-analysis of 19 studies, from Europe but also other countries, including mostly studies focusing on one or more RDs, showed average total costs comprising direct medical costs per patient (drugs, tests, hospitalisations and doctor's visits at $16,513), costs associated with informal care and formal direct non-medical costs at $36 649. The study revealed great cost variability between countries, mainly affected by the type of disease, GDP per capita and public health expenditure (38). Regarding the quantification of the overall burden of RDs in general (not individual diseases), scientific studies come mainly from outside Europe. RD patients often spend more time in hospital than patients with common diseases, and the cost of the former's hospital care is higher (39,40). According to data from Western Australia, the average length of hospital stay was 2.9 days for common diseases, compared to 5.5 days for patients who were taken to hospital because of an RD (39). According to data from the US, it was 6.3 days for RDs and 3.8 days for common diseases (40). In Western Australia, the cost of health care for RD patients was $3,000 higher than the average cost for patients with common diseases upon discharge (39). Patients with RDs often were transferred to another facility or required additional home care (40). Based on data from the US, the direct health costs of RDs were identified as 3–5 times higher than for common diseases, and the overall burden on health care was similar to that of cancer or heart failure patients (41). However, the overall economic burden of RDs, including direct, indirect and mortality costs, was 10 times higher than that of, for example, diabetes, cardiovascular or Alzheimer's disease. The most significant items were direct and mortality costs (42). Parents had higher costs due to the lack of work in caring for a child compared to the person with the disease alone (43). The impact of RDs can also be monitored via the years of life lost (YLL) indicator (i.e. the number of years of life lost due to premature deaths due to RDs). A study based on data from the Veneto Rare Diseases Register in Italy found that RDs accounted for 4.2% of the total YLL in the population (infectious diseases accounted for 1.2% of all YLL, and diabetes accounted for 2.6% of all YLL) (44).

5. CONCLUSION

The number of OD authorisations has quadrupled over the last two decades. One of the factors impacting this is scientific progress (45). Research into RDs is essential for the development of new therapeutic approaches. The existence of affordable treatment significantly reduces the overall economic burden of RDs, especially indirect and mortality costs (i.e. costs for patients and carers) (46). However, the availability of treatment for RD patients remained low in many countries. Different countries have different approaches to OD impact assessment, and these approaches have a significant impact on the availability and cost of treatment in a given country. Economic estimates are not possible without data, which are lacking for most diseases (47). The involvement of patient groups and scientific societies, consultation with patients, and clinical validation of the model and its structure are also important in making economic models. Extensive sensitivity and scenario analyses are recommended (21). Scientific studies based on expert analysis highlight the need to include more criteria in HTA implementation. Our review calls for greater attention to RDs and the need to ensure equal access to ODs for patients living in different countries. To ensure global access to ODs, it is important to cooperate with different national approaches and support the implementation of sophisticated models and best practices in less developed countries, while considering their economic capabilities and capacities.

Among the activities needed to decrease the burden of RDs, increasing awareness of them and promoting funding for their research are important.

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INCENTIVES FOR CORPORATE ENVIRONMENTAL STRATEGIES: FROM REACTIVE TO PROACTIVE STRATEGIC APPROACH

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ABSTRACT

This paper emphasizes the importance of developing well designed corporate environmental strategy that will help a company to fulfill environmental responsibility and achieve sustainability goals. Firstly, the paper presents various external and internal incentives for the development of a corporate environmental strategy. The paper explains external incentives such as regulatory factors, global initiatives, market pressures, and pressure from other external stakeholders. Furtherly, the paper systemizes internal incentives such as improvement of company image, better process control, the possibility of cost reduction, increase in productivity, sales, revenue, and asset value, the increase in the value of environmentally friendly products, better marketing opportunities, better employee motivation, development of knowledge and creativity, the environmental liability of owners and managers, the possibility of influence on environmental legislation, better public relations, improvement of competitive position). Reactive and proactive environmental strategy are described and compared (the main incentives, stakeholder orientation, attitudes regarding the conflict between economic and environmental costs and performance, types of environmental interventions, etc.).

Keywords: *environmental strategy, reactive approach, proactive approach, environmental incentives*

1. INTRODUCTION

Due to an increased need for sustainable development, companies have started to incorporate sustainability principles into their business, considering how they can contribute not only to the value for owners but other stakeholders as well. Many companies have begun to take an active role in developing their corporate social responsibility (CSR) i.e. conducting business aiming to achieve objectives in three main pillars of sustainability (environmental, social, and economic). An integral part of CSR is environmental fit which is defined as a dynamic alignment and adaptation of the company with the resilience of the ecosystem where it is embedded, preserving ecosystem health, and ensuring the provisioning of ecosystem services on which the company depends (Pogutz and Winn, 2009). To deal with numerous environmental aspects in organizational activities, companies started to formulate an environmental strategy that is designed at different levels and in different ways. Such strategy can range from a reactive response (mostly oriented to pollution control) to preventive involvement where the company becomes the creator of environmentally friendly innovation, products, and technologies or even becomes the leader in these processes.

2. INCENTIVES FOR CORPORATE ENVIRONMENTAL STRATEGY

Corporate environmental strategy is defined as a firm's strategy to manage the relations between its operations and the natural environment (Aragon-Correa and Sharma, 2003). It shows the level to which environmental aspects are included in strategic planning (Banerjee,

2002). Corporate environmental strategy refers to integrating environmental issues in business decisions regarding product development, technology, R&D and design, new business, and plant location (Banerjee, 2002; Man, 2010). Insight into the reasons for the growing acceptance of environmentally friendly practices by organizations is provided by various theories, such as the economic approach and the institutional approach. The economic approach suggests that firms adopt environmental protection as part of their strategy based on the expectation of improving business performance, while the institutional approach, based on institutional sociology, suggests that firms respond to institutional pressures, which emphasizes the importance of regulatory and cognitive factors that can influence companies' decisions to adopt certain organizational practices (Delmas and Toffel, 2004). Rayman-Bacchus et al. (2012) systematized factors that encourage environmental responsibility into (1) external factors that include regulatory factors (legislation, public audits, industry associations), market factors (market pressures, competitive forces, sustainability indices such as), stakeholder influence (social movements and environmental associations, socially responsible investment), self-regulation (Global Reporting Initiative - GRI, United Nation Global Compact - UNGC, FTSE4 Good Index, Dow Jones Sustainability Index, Bilateral or Multilateral Agreements); and (2) internal factors that include certain organizational characteristics, internal stakeholders (employees, managers, unions, owners), and certification according to environmental management system standards (EMAS, ISO 14001). We assume that standards for international environmental management systems, set by international standard organizations and national standards bodies, can be seen as an external force that motivates companies toward environmental protection. The main external incentives (forces) that encourage the formulation of corporate environmental strategy are shown in table 1.

External incentives
Regulatory factors (legal standards, economic instruments, Environmental Impact Assessment, public audits, requirements of industrial associations, etc.)
Global initiatives (GRI, UNGC, Dow Jones Sustainability Index, FTSE4 Good Index, Domini 400 social index, etc.)
International standards for environmental management system
Market pressures (environmentally responsible competitors, customers, suppliers, bankers, investors, insurance companies, etc.)
Other external stakeholders (NGOs, mass media, future generations and non-human nature)

Table 1: External incentives for the creation of corporate environmental strategy (Source: Authors' work)

Among various external incentives, an important place is given to environmental legislation at the multinational, regional, national, and local levels. The regulatory framework acts as an driver for companies mainly to limit the use of non-renewable resources, limit greenhouse gas emissions (Niemann et al., 2016), and/or emission of other pollutants. Due to the speed of changes in environmental regulation, the time for complying with environmental standards is becoming shorter. Companies, therefore, cannot afford to wait for the enactment of the new laws because such an approach could lead them to ad hoc activities that are hard to manage. In addition, economic instruments in environmental protection (taxes, pollution charges, permits, concessions, etc.) have set the principle of polluter pay/user pay. In many developed countries, Environmental Impact Assessment is obligatory for new business ventures. Furtherly, state administration usually informs investors about alternative technologies, facilities, and other information needed to conduct business while preserving the environment, health, and safety (EHS). Based on the main principles of various international organizations and their initiatives such as the Global Reporting Initiative (GRI), many organizations publish reports on their corporate social responsibility in addition to their financial statements.

Such responsible organizations voluntarily monitor and use self-regulatory mechanisms such as social responsibility reporting and thus self-regulate their environmental behavior in accordance with national or international standards. Through these reports, companies reveal information on the impact of their business practices and show their sustainability. GRI is one of the most common methods used in corporate social responsibility reporting - it provides universal rules regarding the methodology and process of reporting and sets indicators that allow the comparison of results globally. The most popular sustainability index in the US is Domini 400 social index, and in Europe these are Dow Jones Sustainability Index and FTSE4 Good Index. Furthermore, international standards for environmental management systems such as EMAS (Eco-Management and Audit Scheme) and ISO 14001 (International Standard for Environmental. Management Systems), etc. is additional important driver, as certification according to these standards helps an organization to be recognized in environmental quality on an international level. Market competition is the next fundamental driver for corporate environmental protection (Rayman-Bacchus et al. 2012). Various competitive pressures require that companies play an active role in respecting the environment if they are to prosper. Environmentally superior competitors can set new competition rules that should be followed by other companies within the industry. Other companies within the industry will need time and effort to adopt environmentally friendly products and technologies in their operations. Coping with the competition through environmentally responsible practices has become a feature of competitive dynamics in these industries. Market pressures by customers is additional strong incentive (Saeed and Kersten, 2019). In many developed countries, environmentally responsible consumers form an increasing market segment. Additionally, responsible suppliers can set environmental requirements as a precondition for other partners that participate within the supply chain. Some insurance companies exclude environmental accidents from their policies, reduce pollution coverage or adjust insurance premiums for environmentally responsible companies. More green investors are willing to invest in companies with good environmental performance. Banks such as European Bank for Reconstruction and Development (EBRD), World Bank (WB), etc. choose projects that are expected to have an impact regarding sustainability (in environmental protection, social aspect, digitalization, etc.) as a criterion for granting their loans. An important incentive for EU companies is the possibility of financing from EU Environmental Funds. Environmental non-government organizations (NGOs) advocate the introduction of stricter environmental regulations, and educate, instruct and inform the public to seek innovative, environmentally friendly solutions. They often point to environmental problems, inform about available solutions, examples of best practices, etc. Some of them file lawsuits against companies with irresponsible environmental behavior, while others invest their funds in promoting environmentally responsible practices. In addition to NGOs, the media have an important role in informing and educating the public on environmental issues. Additionally, future generations and non-human nature should be included among stakeholders aiming to achieve sustainable results in long term (Starik and Kanashiro, 2013). In addition to external incentives, companies may find numerous internal motives for shaping corporate environmental strategy (Table 2). Sustainability programs might help in cost reduction, revenue increase, asset value increase, and reduction of risks and liabilities (Fisk, 2010), leverage learning and creativity, flexibility, and resilience (Smith and Lewis, 2011). Also, corporate environmental strategies can bring benefits such as (Dragomir, 2020): higher environmental awareness, better planning of green investments; better process control, new market opportunities, improved corporate image based on transparent reporting, better relations with the community; environmentally friendly innovation of products and processes; improving the workplace quality; increasing employee morale, etc.

Internal incentives
Improvement of corporate image
Cost reduction, productivity increase, better process control
Increased value of environmentally friendly products/services
Better marketing opportunities
Increase in sales, revenue, and asset value
Better employee motivation
Development of knowledge and creativity
Increased possibility to influence environmental legislation
Better public relations
Environmental liability covers
Improved competitive position

Table 2: Internal incentives for the creation of corporate environmental strategy (Source: Authors' work)

In countries where stakeholders became hostile to organizations with poor environmental performance, a good image in environmental protection has great value (Rašić, 2001). Reputable companies are more likely to be accepted by customers, to obtain various permits for their businesses, to be financed within national and international sustainability funds by relevant agencies and associations that promote environmental protection. One of the main assumptions in favor of improving the alignment between the business and the environment is that pollution is caused by waste, discharge, and leakage of pollutants which creates costs. Examples of the numerous practices show savings of materials and energy through improved operations that enhance resource productivity, prevent or reduce pollution and waste, introduce reuse and recycling, select row materials/recycled materials, decrease costs (of cleaning, storage, transport), decrease lost time, waiting or disapproval from customers, etc. The increase in the value of environmentally friendly products/services might include higher overall product/service quality, higher safety, energy efficiency, lower expenditures during the product usage, environmentally friendly packaging, greater possibility of resale, the greater value of waste, lower discarding costs, (after consumption/usage due to recycling, reuse, and circulation). Companies with good environmental performance have the possibility to increase sales due to the higher value of eco-product/services (dependent on price-quality ratio) and partially reduce marketing costs (more media coverage as an example of good practice or a word of mouth as a promotion method). A smart job design that emphasizes the EHS values can help companies to attract quality employees. By enabling them to be proud of their work and participate in environmental improvements, companies could create a base for higher efficiency and creativity of employees. The company should develop knowledge regarding the impact of its business processes and products/services on the environment, and translate this knowledge into innovations that will reduce various forms of waste and costs related to it. Hence, more and more attention is paid to the development of knowledge, methods, and techniques to improve environmental fit: increase resource productivity, material circulation, and recycling, reduce material and energy consumption, waste, emissions, noise, preserve biodiversity, etc. Lobbying can be used as a defensive or offensive tool. Defensive lobbying is an attempt to prevent or delay environmental laws and regulations that would cause high adjustment costs for companies. Offensive lobbying includes encouraging provisions of stricter environmental laws and regulations (that the company can meet) in order to achieve advantages over competitors or encourage customers to buy more eco products/services. Companies with environmental performance better than required by environmental legislation can encourage the state administration to accept their policy as an example of best practice and thus gain advantages over their competitors.

Good environmental performance creates a base to develop good relations with the public as well as to cover the environmental liability of managers and owners. If environmental issues could be incorporated into the overall process of improving competitiveness it would become the core incentive for shaping environmental strategy.

3. REACTIVE V. S. PROACTIVE APPROACH IN ENVIRONMENTAL STRATEGY

Despite the differences in criteria and/or methods for assessing corporate environmental protection and differences in the number of proposed categories, several corporate approaches can be explained that could be placed in the continuum from the point of denial or rejection of environmental protection through reactive strategic approach toward environmental responsibility and proactive strategic approach (Gil et al., 200; Aragon-Correa and Sharma, 2003). At the one end of the continuum of environmental strategy is the reactive approach in which the organization responds to the pressure of environmental legislation and stakeholder requirements through defensive lobbying and investment in cleaning technologies (dealing with pollution and waste) and necessary environmental improvements in products/services. At the other end of the continuum is the proactive strategy, based on anticipating future legislation and stakeholder requirements, which is oriented on designing environmentally friendly processes, products/services, and technologies to prevent negative environmental impacts (Aragon-Correa and Sharma, 2003) and creating positive ones.

3.1. Reactive environmental strategies

The reactive environmental strategy is a strategy in which the company mostly relies on “end-of-pipe” techniques, where pollution and waste are processed after they are generated. The company reacts mainly based on legislation, and installs mechanisms that should "repair the damage". This strategy is based on the additional technical installation for emission control or waste treatment by various chemical, physical and biological processing in order to translate waste/emissions into a form suitable for release into the environment. Additionally, environmental improvements in products are only necessary improvements due to legislative requirements. Reactive strategies generally do not require developing expertise or skills to manage new environmentally friendly processes and technologies but seek remedial ways within existing processes and technologies. This type of strategy stems from the conventional approach, believing that investment in pollution control has a negative impact on economic performance. Pollution control interventions are assumed to be a necessary investment in unproductive assets that generate business costs rather than benefits. The focus of the such corporate environmental strategy is cost minimization, where companies compare the costs of pollution reduction with the expected penalties associated with non-compliance. It is believed that there are divergent interests and conflicts between the company and external stakeholders (social community, governmental and non-governmental organizations, mass media, customers, etc.). Companies that follow the reactive approach often seek to avoid strict environmental policies and legislation, lobby for postponement of such legislation, or relocate their facilities to countries with more lenient environmental legislation. Within such an outdated paradigm, non-compliance with environmental norms might occur, based on indifference or even intentional harm, which happens mostly in countries with less stringent environmental legislation (Dragomir, 2020). What the reactive approach neglects (Curcio and Wolf, 1996) is: (1) the concept of adequate stakeholder management; (2) realistic cost analysis that should take into consideration not only cleaning costs and potential fines but potential cost reductions (due to lower operating costs, lower capital costs, etc.); (3) increased consumer demand and increased value of environmentally friendly products.

3.2. Proactive environmental strategies

Proactive strategies are oriented to innovations and routines considering the preservation of the natural environment which is motivated by internal or external motives, not exclusively by legislation. The proactive environmental strategies are based on pollution prevention, green entrepreneurship, and reputation building (Dragomir, 2020). Such strategies depend on specific and recognizable processes, they are complex and company-specific and depend on market paths and specific resources and capabilities which cannot be easily replicated or imitated (Eisenhardt and Martin, 2000; Aragon-Correa and Sharma, 2003). The proactive strategies aim to improve the relationship between the company and the natural environment in four dimensions (Dragomir, 2020): (1) a redesign of production processes and/or new environmentally friendly technologies, (2) a development of know-how and techniques for product life cycle management, (3) a development of human capital considering environmental values and principles (4) a creation of reputation capital based on social responsibility and ethical conduct of the company. The successful proactive environmental strategy has numerous goals (Dragomir, 2020): timely response to legal and social pressures, creating organizational skills, internalizing environmental costs without compromising profitability, designing environmentally friendly industrial processes, increasing environmental competencies and employee involvement, ensuring competitive advantage through environmental improvements, offering various opportunities for more responsible consumption, creating partnerships between companies and other participants in the value chain, building a good reputation, responsible reporting, etc. The proactive environmental strategy includes a redesign of production, products/services, and delivery which often requires new technologies. Environmental issues are integrated into the main business functions such as operations, procurement, product design, research and development, legal affairs, marketing and sales, human resource management, etc. Also, the proactive environmental strategy requires specific knowledge, know-how, and internal routines based on a process approach and interdisciplinary perspective Pajdaković, Vulić, M, 2021). Solutions are usually multilevel and should be systematically integrated (including their inputs, processes, outputs, and feedback) (Starik and Kanashiro, 2013). To succeed in the proactive environmental strategy, the company should develop, buy or adopt environmentally friendly technology, processes, and/or products/services, and the price/quality ratio of environmentally friendly technology and products/services should be acceptable to customers/other stakeholders who should perceive their true value. In other words, the company should provide greater value than are the costs of adopting and developing an environmentally friendly approach, especially when considering a longer time frame. To facilitate the implementation of the proactive environmental strategy, the company should ensure environmental awareness and training, promote EHS values as core values within organizational culture and climate, encourage creativity and innovation in finding environmental solutions, set the authority and responsibility for environmentally sensitive business activities, set administrative procedures and policies to deal with environmental issues, establish communication, documentation, information and control system that tracks corporate environmental impact and performance (Mårtensson, Westerberg, 2016), ensuring monitoring, assess environmental capabilities and performance in search of continual improvements.

4. CONCLUSION

Various external drivers such as stricter environmental regulations, global initiatives, stakeholder pressures, market pressure, industry requirements, standards for environmental management system, availability of environmentally friendly technologies, and numerous internal incentives motivate companies to integrate sustainability into their business. Principles of environmental protection have been included in main organizational activities along with the stakeholder networks, and directly or indirectly influence the decisions and actions of

organizational decision-makers (Waddock & McIntosh, 2011). To cope with environmental issues, companies started to formulate strategies that help them to improve their environmental impact and these strategies can range in the continuum from the reactive to the proactive approach. The aim of the reactive strategy is to meet external requirements, mainly legislation, and external stakeholder pressure, to find solutions within "end of pipe" technologies. The domain of such strategy interventions is limited by environmental costs, while potentials for environmental improvements are not adequately evaluated. Therefore, in comparison to the proactive approach, the reactive environmental strategy has a lower potential for creating environmental fit. However, it should be noted that there are good examples of efficient cleaning technologies and exploitation of waste that bring the reactive approach closer to the principles of circular economy and thus increase the value of such approach. On the other side is the proactive environmental strategy that creates a better base for achieving environmental fit and sustainability. Such a strategy is driven not only by environmental legislation but other external and internal drivers. Environmental concern is considered a competitive opportunity, not only as a cost or invisible threat. The company can search to be the first to acquire resources (e.g. materials, locations, production facilities, employees, information, knowledge, financial resources, etc.) which are needed for conducting sustainable operations or to be the first on the market with environmentally friendly products or technologies, that uniquely grow from organizational competences to gain competitive advantage. Industry leaders in creating valuable environmental solutions will have the potential to set rules for the whole industry or wider and create benefits not only for owners but other stakeholders as well. The smart proactive environmental strategy enables the company to prosper with a number of benefits that can be recognized in strengthened reputational and human capital, enhanced knowledge and innovation, improved partnerships, improved productivity and competitiveness with maintained profitability, and at the same time respect environmental well-being, especially when considering future requirements and longer time frame.

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INVOLVING EMPLOYEES IN THE ESTABLISHMENT OF EARLY WARNING METHODS BY USING THE ISO 9001 STANDARD IN LARGE CROATIAN ENTERPRISES

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ABSTRACT

Risk management is the entire process of identifying, assessing, and monitoring risks and taking necessary actions in order to prevent the occurrence or mitigate the consequences of adverse events that are liable to jeopardize the output of corporate objectives. Risk is the possibility of occurrence of such events that might adversely affect the realization of corporate objectives, sales activities, and customer service. In addition, missed or unutilized opportunities and possibilities for business improvement are also considered as risks. The risk management process is a central part of strategic management and is an integral part of the process of planning and managing business processes. It serves management as a tool for responsible, transparent, and successful management. Risk management represents the management's process and approaches aimed at preserving assets and financial stability as well as the prevention of losses. Most risks cannot be completely eliminated, but they can and must be managed. The task of the management is to timely recognize warning signals referring to risks that might threaten an enterprise internally and externally and use them properly to prevent crises and adverse events. By implementing an early warning system, management can act promptly and take certain corrective measures in business. The process of establishing early warning methods should be carried out during the development of a strategic plan for the purpose of quality and timely decision-making, better anticipation and optimization of available funds, strengthening confidence in the management system, and the development of a positive organizational culture. All of the employees within an enterprise must actively participate in all early warning processes and indicate opportunities and threats arising from frequent changes in the market, such as the emergence and development of competition, the creation of new products or substitute goods, technological advances, product extensions, development of industry, the advancement of consumer behavior, the protection of rights, and the changes taking place in the political, environmental, and social environment of the organization. Employees should have the main role in generating qualitative indicators and with their risk identification activities prolong the time that management has to make the right decisions. This can be achieved with the adequate implementation of guidelines of the ISO 9001:2015 standard by which the organization realizes many benefits arising from a well-organized business risk management system. The advantages are reduction of business risk, better and timely decision-making, better forecasting and optimization of costs, and reinforcing trust in the management system.

Keywords: *business risks, strategic management, methods of early warning, ISO 9001*

1. INTRODUCTION

The purpose of creating a business risk management strategy is to improve the ability to achieve strategic goals, mission, and vision of the company through the management of threats and opportunities thus creating an environment that contributes to greater quality, efficiency, and results, in all activities and at all levels. To be at risk means to be an entity under the damage of a certain activity (Adizes, 2006). According to the above, risk is a calculated prognosis, i.e., the probability of possible damage, loss, or danger (Andrijanić, Gregurek, Merkaš, 2016).

Setting up a strategy enables an increase in the level of decision-making quality through risk management, i.e., a more detailed and precise consideration of set goals helps managers to make coherent decisions with a realistic assessment of planned results. Furthermore, the application of the risk management model improves business efficiency through a better decision-making process concerning the manner of improving the system and achieving a balance between the acceptable level of risk and control costs. The incorporation of business risk management in the strategic business plan thus becomes the standard in the process of planning and making decisions that are essential for the realization of goals (Young, Tippins, 2001). In recent decades, changes in the environment have strongly been influenced by new organizational forms in the scope of the globalization of the world economy (Fučkan, Sabol, 2013). The goal of the business risk management strategy is to fully integrate risk management into the organizational culture, and to provide a comprehensive framework for identifying, assessing, handling, monitoring, and reporting on risks at all levels of management by establishing effective risk management coordination. With the adequate implementation of the ISO 9001:2015 standard, the organization will prosper because of such a well-organized management system. The advantages are reduction of business risk, lower costs concerning customer complaints, high-quality relationship with suppliers, and a better working environment. A focus on customers, leadership, teamwork, process approach, systematic approach to management and decision making makes the ISO 9001 the most widespread international standard that sets requirements for the establishment and maintenance of quality management systems and is applicable to organizations of all kinds. ISO 9001 includes the core processes within the organization. In addition, by implementing certain actions it ensures controlled leadership and process control. The establishment of the quality management system includes recording and analysis of the existing context of the organization and situation (risk analysis, organization development, resources, processes), management and key employees training on introducing a quality management system, planning the necessary activities for the establishment of the quality management system, implementation of internal audits and evaluation of the system as well as the improvement of the system. Early warning systems consist of techniques and methods of planning, collecting, analyzing, and interpreting data and information, which help to possibly identify hidden signs even in the early stages of knowledge (Labaš, 2011). One of the most important adjustment factors is the response time. Bleicher (Bleicher,1992) states that the amending response time has been reduced when compared to the time available for carrying out any alterations. He illustrates this statement by the disparity between the period required to react and the period available to prepare for threatening intricacies and the corresponding opportunities and threats. He concludes that to reduce the disparity between the mentioned periods, an early warning system is needed in risk management. In his work, Aguilar (Aguilar, 1967) points out that data coming from the environment appears in the form of covert and visible signs according to the time of occurrence, manifested intensity, and visibility. If not detected on time, there is a possibility for covert signs to turn into visible signs. This is exactly the reason why early warning systems exist in the first place. They try to detect covert signs at the earliest stage of their occurrence by investigating the environment and the circumstances in which the organization operates. Detected covert signs must be directed to the management of a particular organization for compression and storage. It is important to detect covert signs in the earliest stage because that will allow for an extension of the time management has for the decision-making process. More time for the decision-making process allows more freedom to combine different types of measures and ventures to find the most effective answer to a possible business crisis. Employees have the main role in generating qualitative indicators and with their risk identification activities prolong the time that management has to make the right decisions.

2. THE OVERVIEW OF PREVIOUS RESEARCH

Osmanagić Benedik (Osmanagić Bedenik, 2007) states that covert signs are manifested through: "a sudden accumulation of similar events that are, or may become strategically relevant for the company, the spread of new opinions and ideas, opinions and views of organizations and society, tendencies in law, and initiatives to change and adopt new legislation." The basic criterion for establishing an early warning system is its division into an operational and strategic one. Dojčinović (Dojčinović, 2009) states that "the main difference between an operational and a strategic early warning system is reflected within their framework". The operational system focuses on short-term success, while the strategical operation system is directed towards possible successes and is also useful while detecting covert signs. Strategic early warning systems, unlike operational ones, are future-oriented with the aim of enabling the long-term existence of the enterprise. They include quantitative and qualitative analyzes of the branch and the environment. "Strategic systems imply a wider range of analysis that includes analysis of the enterprises' environment, sectors and markets in which the enterprise operates, management and financial performance indicators. A strategic early warning system is set in place to improve enterprises' ability to make predictions about developments before they become irreversible, which, at the same time, allows for active risk and opportunity management" (Labaš, 2011, p. 16). Ansoff and McDonnell (Ansoff, McDonnell, 1990, p. 20-21) considered that it is necessary to introduce a "mentality" of collecting weak signals in enterprises. Since managers are not so keen on switching their attitudes since their experience is based on strong signals, this is not easy to achieve. The key disadvantage of collecting only so-called "weak signals" lies in the uncertainty and irrationality, so according to that, also the possibility that they will not be identified. This stems from the fact that long-term and demanding analyzes and research often result in a significant number of different data, including data that may be irrelevant to the sustainability of the observed system. In the signal collection concept, emphasis is placed on data filtering so that the procedures mentioned would not imply that the process is uneconomical. "Search limitations", according to Albright (Albright, 2004, p.38), "can also be reflected in the fact that all these elements can encounter organizational resistance because they require time, organization of process, money, and changes in current practices." Unlike different and well-known approaches based on quantitative analysis of balance sheet positions, crisis signals are now sought to be identified in several symptoms of disturbed forms in organizational behavior. In this way, the real causes of the crisis, which are key resources of every organization in its sphere and environment, are pointed out. Human resources serve as a generator of each crisis and as a way out of it (Matković, Karin, 2013). According to Hall (Hall, 1986, p. 360) managers have at least three basic strategies while managing employee motivation: an undifferentiated, differentiated, and concentrated approach. Hall explains that in a concentrated approach, managers are focused on the segment of employees they consider to be primary and strategically important. One of the most used quantitative models that offer crisis identification signals in the organization is the so-called Altman Z-score which is one of the most commonly used quantitative models in practice that offers signals for identifying a crisis in an organization. Z-score is based on the operationalization of various balance sheet categories and indicators: assets, profit, market value of capital, and sales revenues. However, this and most other quantitative models based on balance indicators, conditionally indicate signals of the crisis by coming late, i.e., at a time when the first signs of crisis in organizations are already visible (Matković, Karin, 2013). It is known that accounting reports are created to show results of the past period and are sort of a historical method. Thus, it is certainly necessary to investigate in what measure quantitative indicators really are early signals. There is a multitude of papers published in professional and scientific journals which illustrate different disorders within organizations, whether it be organizational structure, organizational culture, or organizational behavior, that indicate

different qualitative disorders in the functioning of the organization. Probst and Raisch (Probst and Raisch, 2005, p. 123) identified disruptions in four main areas: growth, change, the leadership of the organization, and organizational changes. By doing so they confirmed the proposed thesis on the reason why organizations at the peak of their success fall into crisis and collapse. Similar thinking and research results can be found in the work of Hassain (Hassain, 2010) and numerous other scientists who investigated the importance of employees in detecting qualitative disturbances important for the functioning of the organization from the aspect of data delivery and early information signals significant for the establishment of early warning systems. From the perspective of organizational behavior, it is necessary and possible to identify numerous forms of the organizational establishment of early warning system in which employees in the organization have the most important place in providing data related to job assignments, employee identification with the organization, motivation of employees, career management, changes to the organization, and inventive and creative employee behavior. Matković (Matković, 2013, p.181) points out that their identification should be one of the fundamental tasks and roles of modern management and managers, especially those at the corporate level. Burke (Burke, 1995) warned the public about their impact on enterprises and the need for change. He pointed out numerous factors that lead to these changes (processes, human resources, structure, technology, and the culture of the organization). Employees are an important factor in detecting early warning indicators because they create data and information that is further used as basic material for decision-making and risk management measures. Zeigenbahn (Zeigenbahn, 2008, p. 415) advises employees to deal with the indicators of early warning with a particular caution because "by experimenting with a random understanding of the human mind, he found out", among other things, "that certain people do not do the right thing because of their intelligence, but pure coincidence or luck and what seems accidental is only what is different from our everyday horizon". Furthermore, Zegenbahn (Zeigenbahn, 2008, p. 416) points out that "spectacular dangers are overestimated while the imperceptible ones are being underestimated, probably because the media in their reporting tends to overemphasize extreme events, which can lead to distortions of employees' ability to assess the situation." It follows from the above that events from the past later often seem logical and are properly understood only after they have occurred. Numerous taxonomies of threats and vulnerabilities, which can with mandatory adaptation to the context and the environment of risk assessment be of a certain help, have been developed for risk assessment. Based on the principles of generic risk assessment methodology, different methods have been developed with different focuses in risk assessment (ISO/IEC 27005): a risk matrix method with predefined values (ISO/IEC 13335-3), risk measurement method that ranks threats according to risk assessment results, the method that assets the likelihood of impact as well as possible consequences, and the method of distinction between acceptable and unacceptable risk. At the same time, numerous auxiliary and interactive risk assessment tools are available, such as COBRA, HESTIA, and RA2. A good interactive qualitative method for risk analysis is CRAMM. It is important to emphasize that the use of these applications is not easy and, as a rule, demands from the analyst to have good training. The risk assessment method must be comprehensive, systematic, adaptive to changes in the real situation and self-leading. It is important to emphasize that it must enable the work on identifying and understanding risk factors and proper decision-making to reduce risk and the protection system for all employees at all levels of the organization. An example is the Rapid Risk Analysis (RRA) method, which enables rapid and effective analysis of major risk factors, involving the capacity of the organization and without the need for a special engagement from a risk analysis specialist. The structure of business risk management depends on the activity in which it is introduced. In large corporations, every business entity will need its own risk management function, which will be in constant communication with other functions and top management.

In smaller, integrated organizations, this function will be at the level of the entire organization. (Andrijanić, Gregurek, Merkaš, 2016, p. 14). The topic of this paper is finding out in what measure are all employees involved in the establishment of early warning methods and generating qualitative indicators in companies in the Republic of Croatia. This paper aims to point out that, regardless of all the above, within the implementation of the early warning system employees are key generators of qualitative indicators, both in the use of opportunities and in eliminating threats from the environment. Human resources are, in this area as well, the key resources of every organization and at the same time the main cause of crises in organizations and the main asset in overcoming crises. The paper investigates the extent to which, in the opinion of the company's management directly responsible for the establishment of an early warning system, employees are key generators of qualitative indicators and the extent to which employees participate in identifying and understanding risk factors and detecting hidden signs at the earliest stage. At the same time, it is worth considering and respecting the view that, according to Kereta (Kereta, 2020, p. 216), the incentives for the development of the early warning system primarily come from the administration, i.e. top management in 71.4% of Croatian large companies. Which is significant because employees involved in the operationalization of the early warning system can offer their maximum if top management understands the purpose and goal of the system, respects the results, and provides support for the implementation of the entire early warning process. The initial hypothesis of the paper is that employees in most large enterprises in the Republic of Croatia are a key factor in creating and functioning of early warning systems, with the help from auxiliary hypothesis they actively participate in generating qualitative indicators and risk identification procedures which prolong the time that management has to make the right decisions. More time for the decision-making process allows more freedom to combine different types of measures and ventures to find the most effective answer to a possible business crisis. "The better an organization is at perceiving the situation and changes, the more capable it is of solving problems, and inasmuch is younger" (Adisez, 2006,p. 235). "A change in the approach to business risks and the implementation and regular application of activities and certain formal steps of the risk management system can significantly improve the success of Croatian companies, and thus make them more prepared for a competitive international market" (Kereta, 2020, p. 7).

3. METHODOLOGY AND DATA SET

The theoretical part of the research uses a method of description with the aim of describing, defining, and monitoring processes and methods, collecting and analyzing information, and reporting from the company's environment. The compilation method was applied within the research of published scientific works in the field of environmental signals, environmental monitoring systems, and the application of information technology in early warning systems. Interviewing mode is used in empirical research to collect data, information, and views in companies operating in Croatia. Based on the primary research, the data necessary for the preparation of this paper was collected in the period from January to March of 2021 within twelve out of a hundred largest companies in the Republic of Croatia. To examine the relationship between the importance of employees' participation in the organization, and the information necessary for the successful operation of the early warning system, descriptive statistics were applied, more precisely, a multivariate correlation matrix with Pearson's coefficient and p-value has been calculated. The method of proving and refuting, in which inductive and deductive methods are also incorporated, is used to gather up the facts on the application of environmental monitoring methods, and to support information technologies in companies operating in the Republic of Croatia. Following the set goal of the research, a survey questionnaire has been formulated consisting of 14 questions structured in four parts: general data on business organization, determination and measure of early warning system

development, the structure of early warning system components, and model sustainability assumptions of the early warning system. After the introductory part of the questionnaire with basic general data, the questionnaire examines data on the functionality of the early warning system and determining the extent to which the early warning system is focused on threats. The questionnaire uses a Likert scale with rating scales ranging from (1), "completely undeveloped" to (5), "fully developed" or from (1), "I strongly disagree" to (5), "I fully agree ". Answers to the questions are being used in the continuation of this paper to determine the involvement of employees in the current state of the early warning system in enterprises in the Republic of Croatia. Primary research was conducted through interviews. The interview was conducted in 12 renowned Croatian enterprises, according to the turnover in 2019. The response rate to the proposed interview was 42.9% which is considered high and relevant. Primary source data were collected through empirical research conducted during the first quarter of 2021, which limits the results of the research to that point in time. Based on the data subjects' responses on the assessment of the state of the early warning system in their organizations at the level of all data subjects, 25% of them believe that the early warning system is developed, 33.4% of them believe that the system is still partially developed. Table 1 states, among other things, that 41.7% of data subjects answered that the early warning system is insufficiently developed, which confirms the conclusion of the published research concluding that large Croatian companies apply and know enough about the procedures, methods, and techniques used in the early warning system and that they follow silent signals indicating strategic changes in the environment (Kereta, 2020).

Table 1: Development of early warning systems in large enterprises in the Republic of Croatia

Does your enterprise/organization have a developed *Early Warnings System* and based on your understanding of what it should include, how developed is it?						
1 - Completely undeveloped; 2 - Partially undeveloped; 3 - Neither developed nor undeveloped; 4 - Partially developed; 5 - Fully developed	Research conducted in 1Q 2021.					
	1	**2**	**3**	**4**	**5**	∑
Number of enterprises according to the development of the early warning system	3	2	2	2	3	**12**
%	**25.0**	**16.7**	**16.7**	**16.7**	**25.0**	**100**

Source: Author's processing

According to Kereta (Kereta, 2020), the early warning system is partially or fully developed in 52.4% of large Croatian enterprises, which indicates similar results obtained by various surveys. In the primary survey of interviewed data subjects who believe that they have developed or partially developed an early warning system, only 28.4% answered that employees in all enterprises' structures were fully or partially involved in the creation and operation of the risk management system. This refutes the set hypothesis that, in most Croatian companies, employees at all levels are actively involved in the creation and operation of the system, i.e., that employees actively participate in the operationalization of the implemented early warning system.

Table following on the next page

Table 2: Employee participation in the creation and operation of the early warning system.

To what extent is the active participation of employees in business risk management and the creation and operation of early warning systems developed in your enterprise/organization?						
1 - Completely undeveloped; 2 - Partially undeveloped; 3 - Neither developed nor undeveloped; 4 - Partially developed; 5 - Fully developed	Research conducted in 1Q 2021.					
	1	**2**	**3**	**4**	**5**	∑
Number of systems according to employee involvement in the implementation and creation of early warning systems	2	2	1	1	1	**7**
%	**28.6**	**28.6**	**14.2**	**14.2**	**14.2**	**100**

Source: Author's processing

In the research process, data subjects answered questions about the manner and methodology in which they involve employees in the process of creating and functioning of the early warning systems, shown in more detail in Table 3. When asked about the manner of employee involvement in the development and functioning of the early warning system, all interviewees, i.e. 100% of data subjects, pointed out the use of the ISO 9001:2015 as a primary system in the establishment of active employee involvement. This confirms the auxiliary hypothesis that in most Croatian enterprises in which employees participate in the functioning of the early warning systems, they are actively involved in the generation of qualitative indicators and risk identification systems.

Table 3: Methodology of active involvement of employees in the creation and operation of the early warning system

To what extent is the ISO 9001:2015 system used to actively involve employees in the creation and operation of the early warning systems in your enterprise/organization?						
1 - Not used; 2 - Rarely used; 3 - Used; 4 - Used in most cases; 5 - Fully used	Research conducted in 1Q 2021.					
	1	**2**	**3**	**4**	**5**	∑
Number of systems according to the intensity of use of the 9001:2015 standard in the implementation and creation of early warning systems				2	1	**3**
%				**66,6**	**33,3**	**100**

Source: Author's processing

In the research process, the data subjects assessed the extent to which the system, in which employees of the company were actively involved in generating qualitative indicators, responded promptly to possible threats and opportunities concerning the system in which indicators were generated exclusively using historical data available from primary and secondary sources. The answers to the question about the expediency of involving employees in the process of creating and functioning of the early warning system are more detailly shown in Table 4. When asked about the timeliness of obtaining key indicators, most of the interviewees, i.e., 85.7% of data subjects pointed out that the use of the ISO 9001:2015 system, and systematic involvement of employees, significantly improved the system. This further confirmed the auxiliary hypothesis that in most Croatian enterprises, in which employees participate in the functioning of the early warning system, the quality of the system significantly increases.

Table 4: Improving the operation quality of the early warning system by involving employees in the creation and operational functioning of the system

To what extent has the employees' active involvement in the creation and operation of the early warning system improved the system in your enterprise/organization?						
1 - It has not been improved; 2 - The operation of the system has only been partially improved; 3 - The operation of the system has been improved; 4 - The operation of the system has been improved in most cases; 5 - The operation of the system has been completely improved	Research conducted in 1Q 2021.					
	1	**2**	**3**	**4**	**5**	∑
Number of systems according to the intensity of work improvement		1		3	2	**7**
%		**15.3%**		**42.9**	**28.7**	**100**

Source: Author's processing

4. RESEARCH RESULT AND DISCUSSION

The relationship between the system, the environment, and the degree of control that an organization can perform on system environment factors depend largely on the scope and intensity of gathered information needed to identify, analyze, measure, and control risk factors. The course of the risk management process best demonstrates cost-effective protection controls used for the mitigation or elimination of the risk, i.e., it indicates the involvement of employees, in all business segments, to participate in the necessary implementation of reliable methods used to reduce the fragility of the system. According to the research results, the early warning system has been fully or partially implemented in most large Croatian enterprises, thus confirming the hypothesis. Companies that have a partially or completely developed early warning system at a greater percentage, should use the system to educate employees and actively involve as many of them as possible in the generation of qualitative indicators and thus prepare them for future events. By introducing such an early warning system, managers and entrepreneurs would have timely information concerning the trends of certain future factors and could prevent risky situations with timely mannered strategies. By involving employees in the operationalization of the implemented early warning system, the company's management has the advantage of certain opportunities that would not be noticed on time without such a system. With early warning and business risk management systems based on the active involvement of employees in the generation of indicators, it is possible to increase the efficiency and effectiveness of large Croatian enterprises. The research showed that a change in the approach to business risks management and operating warning system, together with the implementation and regular application of employee activities, can significantly improve the success of Croatian enterprises, thus preparing them for a competitive international market.

5. CONCLUSION

The early warning system is significant for companies due to the pronounced dynamism and complexity of the environment in which they operate. The enterprise is, regardless of its size, still susceptible to the crisis. Deployment of such a system and the involvement of employees in its implementation and operationalization makes it easier to obtain information about possible changes and it provides preparation time for everything that future business brings. The strategic risk management system is a reliable tool for managers in reviewing the existing strategy and its compliance with the expected changes in the environment. It consequently creates recommendations about necessary changes in the strategy of the enterprise.

In the conducted research, most data subjects answered that risk management, and the establishment of an early warning system is fully or partially developed concerning the understanding of what the system should include, which is actually a very high percentage and indicates the existence of a systematic approach to risk management in large Croatian enterprises. Companies that in a higher percentage have a fully or partially developed risk management system, to a lesser extent, actively involve employees at all levels in the creation and operation of the early warning system. Analyzed data shows that the ISO 9001 standard is extremely suitable for the active involvement of employees in the implemented early warning system, and, it contains measures that enable the employees' involvement in the operationalization of the system. The calculation of the correlation matrix showed that there is a statistically significant correlation between the use of the norm and the participation of employees in the use of the early warning system. By examining data of the Republic of Croatia, a great potential has been noticed for other Croatian enterprises, in which the ISO 9001:2015 system has been established to start implementing the early warning system and actively involve employees in the creation and operation of the system.

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A GAME THEORY PERSPECTIVE ON TRUST, COOPERATION AND LAW ENFORCEMENT

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ABSTRACT

Trust is most often defined as the willingness of one person/party to act towards another person by giving its resources or services with the assumption that the other person/party will reciprocate. Trust is risky, but on the other hand it may be profitable on the long run – it is well known that countries with higher GDP are the countries with higher level of trust as well. The scope of this paper is to reveal the main factors in the development of such high-trust societies using simplified game-theoretical approach.

Keywords: *trust, cooperation, direct reciprocity, prisoner's dilemma, world economy*

1. INTRODUCTION

When we talk about trust, the emphasis is usually on the person who takes the risk, however, in practice, trust is manifested through cooperation. People with a higher level of trust enter into interactions more easily, get involved in social activities more often, and engage in business ventures and investments more often [1]. Generally speaking – a higher level of trust is reflected in a higher degree of cooperation. This relationship can be seen on the level of macroeconomics as well – countries with a high degree of trust are the most developed countries as well, and there is no doubt about that (Figure 1). In such countries, everyday life and business are safer and simpler – these are countries where transaction costs are lower, oral and written contracts are respected, fraud is rare, corruption is at a minimum and there is an atmosphere of security and stability [2]. On the other hand, low-trust countries are countries with higher costs, higher interest rates, and generally higher inequality. The absence of trust reduces the overall welfare of society [3]. Ofcourse, trust may be classified according to the nature of the object – one can trust a friend, neighbour, school, Church, Government or EU institutions. There is also trust in the inanimate objects, such as the strength of a rope, or the accuracy of a sensor; trust in the corporation that manufactured or supplied that inanimate object; trust in corporate or government entities, such as the security of a savings account in a bank, or the safety and efficacy of medications etc. [4]. In the literature, there are four major types of trust: generalized social trust, out-group trust, in-group trust, and trust in neighbours (interpersonal trust) [5]. In this paper, the emphasis will be on interpersonal trust, that is, on one-on-one cooperation. However, one should bear in mind that interpersonal trust is very often correlated with institutional trust (Figure 2).

Figure following on the next page

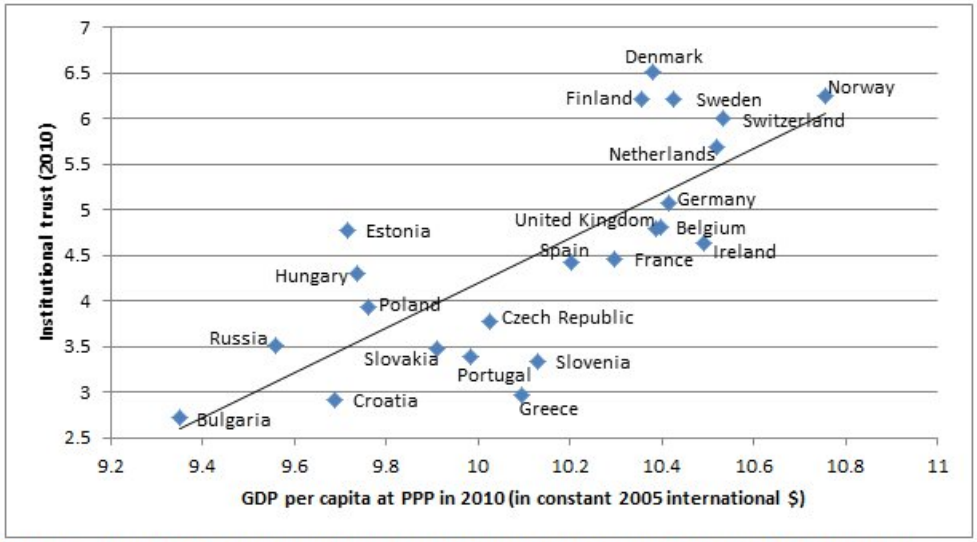

Figure 1: Association between institutional trust and GDP per capita (2010). (Source: Zsolt Boda and Gergő Medve-Bàlint, calculations made on the basis of European Social Survey 2010 and World Bank data)

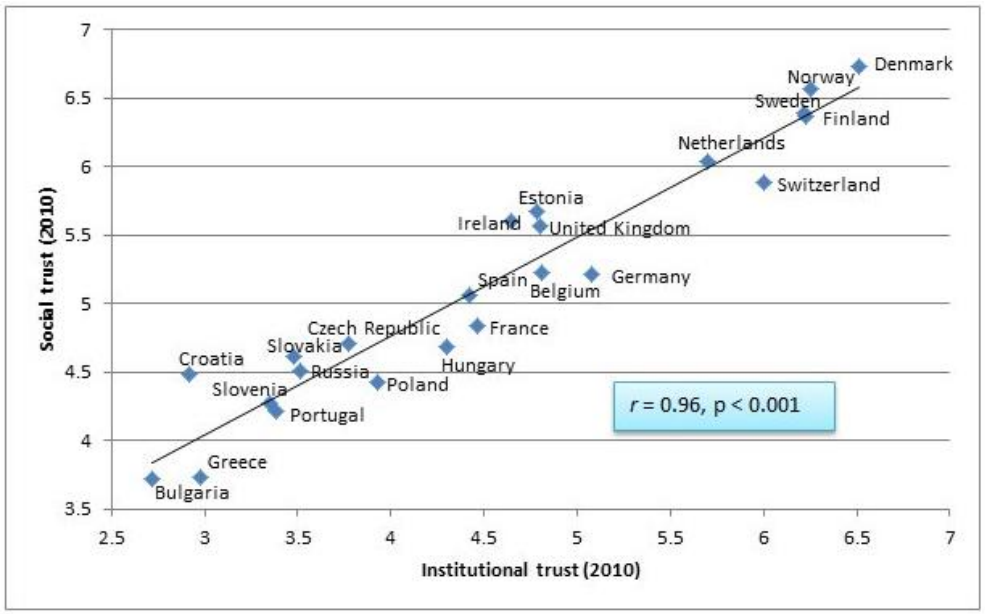

Figure 2: Association between interpersonal trust and institutional trust. (Source: Zsolt Boda and Gergő Medve-Bàlint, calculations made on the basis of European Social Survey 2010)

Interpersonal trust in Scandinavian countries goes hand in hand with institutional trust and higher standard of living. Sometimes it seems that such high-trust societies maintain themselves effortlessly, as if the secret of their success lies solely on their kind-hearted mentality. Indeed, what is the main factor that increases the level of trust? Is it higher standard of living? Or the standard of living is just the consequence of their trustfulness? The aim of this study is to find out under what conditions trust and, therefore, economic prosperity can prevail in the population. Can a society with high level of trust (and cooperation) be maintained without the police and the judiciary? In order to answer these questions, we shall use the Prisoner's Dilemma (PD) as a mathematical model and we shall try to expand this model as much as possible.

The use of PD can be easily justified – PD describes the relationship between two selfish individuals who are faced with dilemma: to cooperate or not to cooperate (defect). A person which cooperates cannot be sure if the other person will return the favour. Therefore, the person who offers cooperation becomes temporarily vulnerable which is exactly the definition of trust: "Trust is the willingness of one party (the trustor) to become vulnerable to another party (the trustee) on the presumption that the trustee will act in ways that benefit the trustor." [6,7].

2. THE FREE RIDER PROBLEM

Since cooperation among individuals is beneficial to everyone in a group, the emergence of cooperation may seem self-explanatory or even trivial. However, in almost every group there are individuals who receive favours but never reciprocate. This problem is called the "problem of free riders". It is a problem in everyday life as well as in politics, but it was also huge theoretical problem in evolutionary biology because species that have not solved this problem (during their evolution) cannot live in a group. Surprisingly, there are many species, besides humans, that show selfless, cooperative behaviour, sometimes in very complex societies [8]. In order to explain the emergence of cooperation among such animals, scientists have proposed several mechanisms of cooperation, the most famous of which is Direct Reciprocity. This mechanism can be vividly described by the phrase 'I scratch your back, you scratch mine'. The individual reduces its fitness in favour of other individual who will hopefully return the favour. Since there is always a risk of exploitation (that service will not be reciprocated), the question is: under what conditions reciprocity can survive? The answer to this question may be given by game theory, specifically by the game called Prisoner's Dilemma. Prisoner's Dilemma (PD) is a famous game which illustrates two selfish players who cannot reach an optimal solution. Both players have to decide whether to cooperate (C) or defect (D) which leads to the four possible outcomes:

		2nd Player	
		C	D
1st Player	C	R, R	S, T
	D	T, S	P, P

		2nd Player	
		C	D
1st Player	C	3, 3	0, 5
	D	5, 0	1, 1

Table 1: Payoff matrix in the Prisoner's Dilemma game: the relative sizes of the payoffs S<P<R<T are arranged in such a way that defection leads to the highest payoff T. For example one can use the Axelrod values S=0, P=1, R=3, T=5.

If both players cooperate, they are awarded at an intermediate level R, but if one of them defects, he/she wins the highest possible payoff T while the other player gets the lowest possible payoff S. The problem is that the relative sizes of the payoffs S < P < R < T are arranged in such a way that a defection leads to the highest payoff T with a risk of relatively mild punishment P if the opponent defects as well. Although the decision of cooperating by both players provides the more optimal payoff, the decision of defecting is a rational decision and it provides Nash equilibrium despite the worse payoff [9]. However, if PD is repeated several times between the same two players, cooperation may emerge. This kind of game is called the Iterated Prisoner's Dilemma (IPD).

3. THE SHADOW OF THE FUTURE

To find out which is the most effective strategy in the Iterated Prisoner's Dilemma (IPD), in 1979. Robert Axelrod invited mathematicians to submit their strategies to a computer tournament. To everyone's surprise, the tournament was won by the simplest strategy known

as Tit-for-tat (TFT) which initially cooperates and then simply mimics the previous move of the opponent. The outcome of the tournament was unexpected, indeed, since it was well known that Always-Defect (ALLD), the strategy of defecting on every round, is the only evolutionarily stable strategy in general [9,10]. Numerous analyses and computer simulations, from the Axelrod tournaments onward, have shown that TFT can fight against the ultimately defective strategy Always-defect (ALLD) or even win under certain conditions. The success of the TFT strategy rests on several features, of which Axelrod points out the following:

1) Kindness (TFT strategy never cheats first)
2) Simplicity (other players easily recognize it)
3) Forgiveness (given that TFT copies the opponent's move, it is easy to re-establish cooperation)
4) Vigilance (takes revenge without hesitation and thus discourages players from cheating again)

However, the fourth virtue is also a weakness, especially if on the other side is a player who adheres to the same strategy of behaviour. Of course, this weakness is only noticed if one TFT player for some reason thinks that another TFT player has defected. But such an option is realistic and it should be remembered that in real life there is always communication noise. Here is how Axelrod comments on this characteristic of the TFT strategy: " If the other TFT player defects as well, the result will be an endless echo of alternating defection. In this sense, the TFT strategy is not forgiving enough" [9]. During the Axelrod's first tournament, a fixed number of rounds (n=200) was played. In later analysis, it turned out that TFT would have lost the tournament due to some more sinister strategies. For example, a pure TFT strategy can be defeated by a strategy that plays TFT until the final round when it defects. Such a strategy would win the tournament. In order to avoid such shenanigans, at the next tournament, instead of a fixed number of rounds, Axelrod introduced the probability of playing the next round. The introduction of such probability may seem strange, but one should bear in mind: if the number of interactions between pairs of individuals is known in advance, ALLD will be the winning strategy. However, in reality, in biological environments, the same individuals may encounter more than once, so introducing probabilities is a more realistic assumption. Axelrod concludes that the basic prerequisite is "the shadow of the future", that is, a sufficiently high probability of meeting again [8]. When players know that there is a probability of meeting again then cooperation is a more profitable option than cheating. It has been documented that during the First World War (where soldiers were forced into endless trench warfare), many spontaneous armistices occurred. Over time, soldiers stopped shooting at each other or demonstrated ritual cannonades at scheduled times. Most of the time they were free to walk in no man's land, exchange cigarettes or even play football with enemy soldiers. Fake attacks were organized to satisfy their officers, and the soldiers knew in advance the exact time of the attack. This is a typical case of cooperation between troops when the soldiers know that they will be facing the same enemy for a very long time; in that case, they are motivated to cooperate and not to fight because they themselves can expect the same behaviour from the other side in the future [11]. In normal war circumstances, when the mobility of the army is enabled, such cooperation does not exist, because the military troops enter into one-time conflicts, and not into a permanent confrontation. In the business world, we can see a similar pattern: frauds occur when contracts are coming to an end and when it is known that the partners will no longer do business with each other. The same is true in love relationships: when a marriage breaks up, spouses become prone to slander and lies in order to get as much as possible in matters of property distribution or custody of children.

4. TRUST AND FORGIVENESS AS PROBABILITIES

In order to gain realism and to get as close as possible to real situations from nature, Nowak and Sigmund included uncertainty in their players' moves. Nowak comments on this approach: "It should mimic biological interactions. Players can misinterpret someone else's move (or identity) or clumsily implement their own intentions" [12]. Thus, unlike the authors of simulated IPDs that were conducted before this study, Nowak and Sigmund did not determine their players with fixed strategic algorithms, rather with probability of cooperation after the opponent's cooperation and probability of cooperation after the opponent's defection. As opposed to deterministic strategies, these players carry so called reactive strategies. The reactive strategy of an individual player is given by the ordered pair (p, q), where p and q are conditional probabilities for cooperation after the opponent's cooperation i.e. after betrayal. Probability p may be understood as the willingness to cooperate in the next encounter after previous successful encounter, while probability q may represent the willingness to forgive after previous defection. For example, strategy TFT can be represented by (1,0), since it cooperates after cooperation, but it certainly does not cooperate after it has been betrayed. The ultimate free rider ALLD is represented by (0,0), since it never cooperates while the ultimate cooperative strategy ALLC is represented by (1,1) since it always cooperates. Each strategy can be represented simply as a point (p, q) in the unit square. The third dimension can be used for the visualization of the relative frequency x of the strategy in the population.

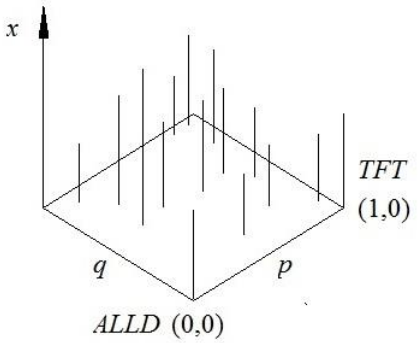

Figure 3: Frequency of the strategies at some point in the game. The height of the line shows the relative frequency of players using strategy (p, q). Strategies that originally had the same relative frequency gradually die or progress depending on the achieved result.

At the beginning of the simulation there was one hundred of reactive strategies which covered a broad range of fully cooperative, defective, vengeful and random behaviour. Initially all strategies were present in the same relative frequency 1%. When the simulation kicked off, strategies confronted each other in a round-robin fashion. At the end of each round, their relative frequencies were re-calculated according to their success in a previous round. Gradually, some of the strategies started to vanish. The strategies that were close to ALLD (0,0) increased in frequency, while other strategies especially those that were close to ALLC (1,1) disappeared very quickly. This phase of the evolution Nowak commented vividly: "With the rich diet of suckers, it pays to defect!". However, after one hundred of generations, the population was abundant with free riders and then the situation started to alter dramatically. Small band of TFT-like strategies i.e. near (1,0) started to grow and exploiters began to vanish. Reciprocity was established. After t =200 generations ALLD was practically non-existent, but interestingly, the TFT strategy and similar strategies (which had caused this shift) did not profit at the end: after removing exploiters, they had been replaced by the strategy most similar to Generous-tit-for-tat strategy (GTFT) positioned at the (1,0.3) in the unit square. Evolution stopped and the final winner was GTFT, the strategy with 30% probability of forgiveness.

To conclude: although TFT is essential for the emergence of the cooperation in the population, it only paves a way for the more generous strategies.

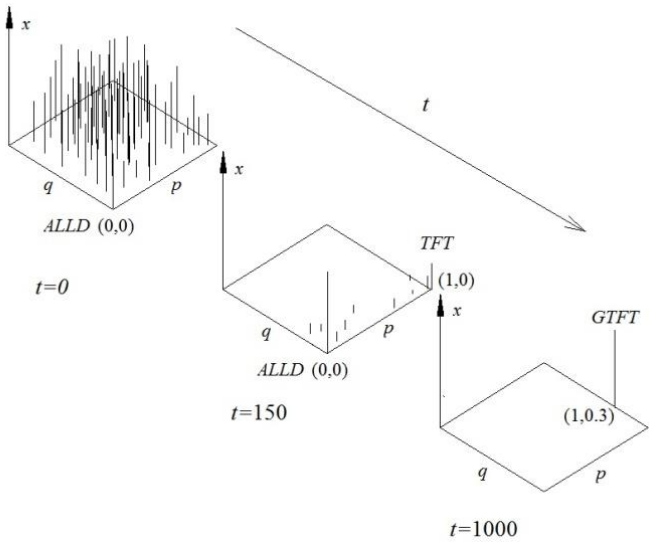

Figure 4: Evolution of cooperation in a heterogeneous population. For the first 100 generations, strategies close to ALLD dominate the population. After 150 generations, TFT is revitalizing and establishing cooperation in the population, allowing forgiving strategies to grow. The final winner is GTFT (1,0.3).

5. CONCLUSION

For centuries, philosophers have searched for moral principles and during the centuries they have proposed principles such as virtues, duties, agreements and utility maximization. No consensus has been reached, however, a common agreement is that those principles should help balancing the selfish interests of the individual against the interests of other individuals or of the society as a whole [4]. The shared body of cultural knowledge includes the ethics of the society, which helps to direct individuals away from possibly-tempting action choices, and toward actions that are better for the society in the long run, and therefore also better for the individual [13]. As it was mentioned trust and trustworthiness are widely recognized as important part of the ethics to the successful functioning of society [1,2,3,4,14]. Lack of trust decreases willingness to cooperate making it harder to defend, to gather food or to exploit land. Erosion of trust decreases cooperation resulting in scarcity of resources which can bring a society to the point of collapse [17,18]. Voluntary cooperation requires trust of one's partners, accepting vulnerability in the confident belief that it will not be exploited [15]. Such definition of trust is clearly equivalent to interpersonal trust between individuals, such as the trust between partners in crime in the Prisoner's Dilemma. However, the theoretical studies of PD along with many simulations conducted on PD have shown that cooperation is not easy to achieve – it can be established only if there are individuals who are ready to punish. In order for cooperation to survive, individuals must have the ability to memorize and recognize the free riders, and it is precisely what TFT strategy posses. It remembers interactions and promptly takes revenge in case of betrayal. In the past forty years, many computer simulations have been carried out and it has been shown that TFT is the only cooperative strategy that can overcome the exploitative strategy of ALLD provided that there is a sufficiently long "shadow of the future". Punishing proves to be essential in both Prisoner's Dilemma and Public Goods Game (PGG). Many studies based on the methods of experimental psychology have shown that participants in PGG cheat the least when rewards and punishments are applied at the same time [16].

Moreover, in Nowak-Sigmund's simulation, it has been shown that the presence of TFT is necessary to eliminate the exploiters and to make room for more generous strategies. It seems that, in the evolution of cooperation, TFT plays a role of a police (and of a judge) which uncompromisingly punishes outlaws and thus "cleanses" the system of exploiters. However, when cooperation is established in the system, then it is better to have a certain percentage of the forgiving moves, because each mistake (due to the communication noise) may cause a spiral of revenge. The phase of cleansing in Nowak-Sigmund's simulation irresistibly reminds on the early societies such as Babylonian which was based on the reciprocal justice "an eye for an eye". The Roman law of retaliation (Latin: lex talionis) was based on the same principle – a person who has injured another person is to be penalized to a similar degree by the injured party. Only centuries after strict judiciary system has been established, the conditions for more forgiving ethics have been met. Nowak and Sigmund concluded that Tit-for-tat is the pivot, rather than the aim, of the evolution toward cooperation [12]. A strategy that can terminate the spiral of violence actually is a sort of behaviour that includes trust and forgiveness. That sounds very nice and very inspiring. However, in a population that consists solely of forgiving co-operators (without TFT agents), one single free rider is enough to destroy cooperation. Such a population is very fragile and it does not take long to fall into the state of chaos and exploitation. Game theory perspective is quite clear on this issue: a society with high level of trust (and cooperation) cannot be maintained without police. Although trust is prerequisite, prosperity does not come automatically with trust. It takes years of strict enforcement of the law to build a high-trust society, and then again, such society is not self-perpetual and immune to fraud and crime.

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USING OF LOGISTIC AND GENMOD PROCEDURES BY THE ANALYSIS OF EXCLUSION FROM THE LABOUR MARKET

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ABSTRACT

Poverty and social exclusion of person or households are very serious problems affecting almost every country of the world. They are assessed from different points of view, such as the insufficient amount of income to procure basic life needs (income poverty) or from the point of view of the lack of at least three out of nine deprivation items (material deprivation). The third aspect of assessing poverty and social exclusion is the very low work intensity of person in the household (exclusion from the labor market). The aim of the article is the analysis of the third aspect of poverty measurement in the world within the context of the Europe 2030 strategy - very low work intensity. Using the data obtained from the EU-SILC 2021 statistical survey and using the LOGISTIC and GENMOD procedures within the SAS Enterprise Guide statistical software, we apply logistic regression methods and generalized linear models to quantify the effect of relevant categorical factors on the binary dependent variable very low work intensity of person in Slovak households. Using the LOGISTIC procedure will allow us to estimate a binary logistic regression model for the analyzed variable very low work intensity depending on factors such as economic activity, level of education, type of household, age, sex or region in which the person lives. By intervening in the programming code, we will extend the model with contrast analysis, in which we apply the CONTRAST statement, through which we identify hidden relationships between individual levels of factors and also the ESTIMATE statement, with which we estimate the probability that a person will face the risk of being excluded from the labor market depending on the selected levels factors. In the article, we will also show the estimation of the least squares means using the LSMEANS statement within the GENMOD procedure, based on which we will assess the existence of a non-significant difference in the least squares means of the logit of the chance of exclusion from the labor market between individual levels of the factor. In the case of non-significant differences, we merge the most similar categories into one newly created category, thus ensuring more accurate results of the entire model.

Keywords: *contrast analysis, generalized linear model, least squares means, logistic regression, very low work intensity*

1. INTRODUCTION

Very low work intensity (VLWI) belongs to one of the three poverty monitoring indicators in the context of the Europe 2030 strategy. Various studies, e.g. (Atkinson, Guio and Marlier, 2017), (Johnston and McGauran, 2018), (Lehwess-Litzmann and Nicaise, 2020), (Rastrigina et al., 2015), (Voßemer and Eunicke, 2015) revealed that the risk of poverty depends from different factors, but if we were to look at this problem from the point of view of a very low work intensity, then the risk of household poverty depends primarily on the composition of the household, or the number of economically inactive persons, then the educational level and at the same time on persons who are capable of performing work activity, which is called work intensity.

According to Eurostat (2021) definition, households with very low work intensity are the so-called quasi-jobless households are those in which less than 20% of the work potential was used within the reference period. The use of the working potential is assessed for persons who are in the productive age set from 18-64 years (the limit of the productive age has been increased from 59 years to 64 years in the context of the Europe 2030 strategy), excluding persons who are studying (18-24 years) .

2. LOGISTIC REGRESSION

Logistic regression is an extension of classical linear regression because it quantifies the estimate of the association of one or more independent variables with a binary dependent variable. In other words, it is used to estimate the probability of the observed event given the values of the independent variables (Kleinbaum et al., 2002). To quantify the logit model, it is important to transform the binary dependent variable into a continuous variable (we express the logarithm of the odds). In such a case, where the dependent variable is expressed by $logit(p_i)$, we get a linear relationship between the dependent variable and the vector of independent variables:

$$logit(p_i) = ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} \ldots + \beta_k x_{ik}$$

where β_j are unknown model parameters.

We verify the significance of the logit model using three chi-square tests (likelihood ratio test, score test or Wald test), while (Allison, 2012) states that in the case of large enough databases, it is not necessary to prefer any of the mentioned tests. To verify the significance of the influence of independent variables on the dependent variable, we use the Wald test:

$$Wald = \widehat{\boldsymbol{\beta}}^{\mathrm{T}}.\mathbf{S}_{\mathrm{b}}^{-1}.\widehat{\boldsymbol{\beta}}$$

where $\widehat{\boldsymbol{\beta}}$ is the vector of regression coefficient estimates and $\mathbf{S_b}$ is the variance-covariance matrix of the vector $\widehat{\boldsymbol{\beta}}$.

An advantage of using logistic regression is that regression coefficients can be interpreted as odds ratios (Sperandei, 2014). The odds ratio expresses the extent to which the probability of the observed event changes in the case of a unit increase in the independent variable (quantitative variables) or compared to the reference category (qualitative variables) while maintaining the ceteris paribus condition.

$$OR = \frac{odds_1}{odds_2} = e^{\beta_j}$$

As stated by the authors (Schober and Vetter, 2021), the condition for using logistic regression is compliance with the following assumptions:

- if the independent variable is quantitative, it must have a linear relationship with the logit (natural logarithm of the odds),
- individual observations must be independent,
- the model must be correctly specified (Hosmer-Lemeshow goodness-of-fit test).

We will apply the estimation of the logit model within the SAS Enterprise Guide statistical software using the LOGISTIC procedure (Menard, 2002). Using the GENMOD procedure and the LSMEANS statement, we identify the significance of the difference in least squares means between pairs of categories of individual factors. By including the CONTRAST statement within the LOGISTIC procedure, we performed contrast analysis to reveal deeper relationships between factor categories. (SAS Institute, 2019) We define contrasts as linear combinations of model parameters (Šoltés et. al, 2022) and they are used by the testing differences between several factor categories simultaneously using general linear hypotheses: H_0: **LB** = 0, where **L** is is the matrix of contrast coefficients, **B** is the parameter vector and **LB** is is an estimable function (Shad et al., 2020). We then use the Wald test to verify the statistical significance of linear combinations of model parameters.

3. ANALYSIS OF VERY LOW WORK INTENSITY

The first and important step to obtain reliable results of individual analyzes is a relevant database. Since the aim of the paper is to analyze the very low work intensity of people living in Slovakia, the input database consists of data obtained from the statistical survey EU-SILC 2021. Based on experience and at the same time results from various scientific works (Glaser-Opitzová and Vojtková, 2020), (Šoltés et al., 2018), (Ward and Ozdemir, 2013) and so on, we assume that very low work intensity can be effected by factors such as education, economic activity, marital or health status, type of household, urbanization or the region in which the person lives. In the following analyses, we will work with the dependent variable very low work intensity (VLWI), which is dichotomous with the levels "yes" (person at risk of very low work intensity) and "no" (person not at risk of very low work intensity). The independent variables entering the analysis are categorical with several levels (Table 1): Education, EA (economic activity), HT (household type), Marital Status, Health, Urbanization and Region.

Table following on the next page

Factor	*Categories*
EA	o *Disabled_person* o *Inactive_person* o *Person_in_household* o *Student* o *Unemploy*ed o *z_at_Work* (employed person – reference level)
EDUCATION	o *Less_than_Secondary* o *Post_Secondary* o *Tertiary_1* o *Upper_Secondary* *z_Tertiary_2_3* (tertiary education of 2. a 3. degree – reference level)
HT	o *1A_at_least_1Ch* (household of 1 adult with at least one dependent child) o *1Adult* (household of 1 adult) o *2A_1Ch* (household of 2 adults with one dependent child) o *2A_1R* (household of 2 adults, with at least one of them aged 65+) o *2A_at_least_3Ch* (household of 2 adults with at least 3 dependent children) o *2Adult* (household of 2 adults) o *Other_0Ch* (other household without dependent children) o *Other_with_Ch* (other household with dependent children) o *z_2A_2Ch* (household of 2 adults with 2 dependent children - reference level)
MARITAL STATUS	o *Divorced* o *Never_married* o *Widowed* o *z_Married* (reference level)
HEALTH	o *Bad* (bad and very bad health status) o *Fair* (fair health status) o *z_Good* (good and very good health status – reference level)
URB	o *Intermediate* o *Sparse* o *z_Dense* (reference level)
REGION	o *BB* (Banská Bystrica Region) o *KE* (Košice Region) o *NR* (Nitria Region) o *PO* (Prešov Region) o *TN* (Trenčín Region) o *TT* (Trnava Region) o *ZA* (Žilina Region) o *z_BA* (Bratislava Region – reference level)

Table 1: Information about factors and categories
(Source: EU-SILC 2021, own processing)

3.1. Model of VLWI of persons in Slovak households

Using the LOGISTIC procedure in the statistical software SAS Enterprise Guide, we quantify the logistic regression model. To verify the effect of the factors included in the model, we apply the Wald test, which tests the null hypothesis that the independent variable doesn't have a significant effect on the dependent variable.

Type 3 Analysis of Effects			
Effect	**DF**	**Wald Chi-Square**	**Pr > ChiSq**
EA	5	464.8397	<.0001
HT	8	137.3158	<.0001
Education	4	92.7375	<.0001
Region	7	44.9132	<.0001
Urbanisation	2	29.1665	<.0001
Marital_status	3	9.7072	0.0212
Health	2	8.3396	0.0155

Table 2: Test of significance of the factor effect on VLWI
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

The significance of the effect was confirmed for all factors included in the model (Table 2), as the resulting p-values were small enough not to exceed the applied significance level of 0.05. We can assess the size of the effect of individual factors on the basis of the resulting values of the test statistic, while the EA, HT, Education or Region variables have the greatest effect on the dependent variable. We will verify the significance of the model with these factors through three tests (Table 3): Likelihood Ratio, Score, Wald. Given the sufficiently large sample, there is no reason to prefer either of the mentioned tests. Based on these tests, we verify the validity of the null hypothesis that the regression coefficients are zero, or the model is not statistically significant. The resulting p-values of all three tests clearly inform us that we reject the null hypothesis because the model is significant at any significance level.

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	1902.6024	31	<.0001
Score	2578.5303	31	<.0001
Wald	763.3943	31	<.0001

Table 3: Significance test of logistic regression model
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

Adequacy and success of the model in prediction are confirmed by the association measures from Table 4: Sommer's D, Goodman-Kruskal's Gamma and c statistic, whose values are sufficiently high. The comparison of concordant and discordant pairs also strongly testifies to the sufficient quality of the model. The statistic c can also be represented graphically using the ROC curve (Figure 1), while its value represents the area under the ROC curve (the larger the area between the curve and the diagonal, the higher the quality of the model).

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	95.3	Somers' D	0.906
Percent Discordant	4.7	Gamma	0.906
Percent Tied	0.0	Tau-a	0.116
Pairs	3453408	c	0.953

Table 4: Assessment of model quality using association measures
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

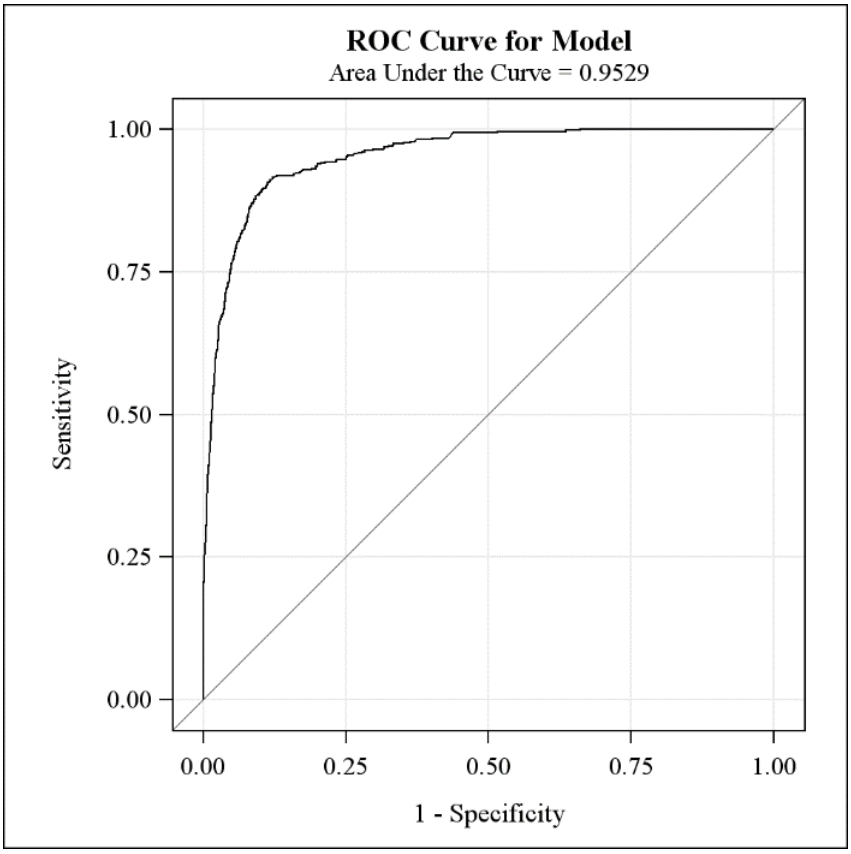

Figure 1: ROC curve for the VLWI logistic model
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

We quantify the effect of the independent variable on the dependent variable using the odds ratio, which expresses how the chance that a person will face a very low work intensity changes compared to the chance that a person will not be threatened by a very low work intensity (under ceteris paribus conditions, i.e. other factors remain fixed at the reference level). Due to the extensiveness of the output, we will only list some of the resulting values. Very low work intensity was mostly determined by economic activity (table 1). The most risky category of this variable is Disabled_person because the chance that such a person will be threatened by very low work intensity is up to 115.1 times higher than the chance that a person who is employed will be threatened by very low work intensity. In the case of the HT factor, the most critical category is 2A_1R. The chance that a person living in a household of two adults (with at least one of them aged 65 and over) will be excluded from the labor market is 36.1 times higher than in the case of a person living in a household of two adults with two dependent children. Another of the most effected factors was education, where, based on the resulting values of the odds ratios, the most critical category of persons with the lowest level of education (Less_than_Secondary). The odds ratio of being threatened by very low work intensity is 8.6 times higher in the case of a person with lower than secondary education than in the reference category Tertiary_2_3. Within the Region variable, the odds ratios of the individual categories are very similar, but based on the results, so the most critical region is the Košice region (the chance is 3.9 times higher than in the Bratislava region). Odds ratios cannot be considered different in the case of some regression coefficients, precisely because the p-values of the significance test of individual categories exceed the significance level. In such a case, it is important to consider whether the effect of some factors is conditioned by this problem. Given this fact, we will quantify the deeper relationships between the factor categories through further analyses.

3.2. Analysis of least squares means and contrast analysis

The resulting values of previous analyses, specifically when assessing the significance of individual categories of factors, revealed the statistical non-significance of some regression coefficients. Using the LSMEANS statement in the GENMOD procedure, we identify the existence of difference of least squares means between some pairs of levels of the four most effecting factors of the model. A statistically non-significant difference of least squares means between pairs of factor categories is shown by the red line (Figure 2) that extends the diagonal. In the case of the EA variable, we can see a statistically non-significant difference between pairs of categories Disabled_person and Person_in_household (p = 0.4210), Disabled_person and Unemployed (p = 0.3134) or between Person_in_household and Unemployed (p = 0.7889). The significance of the difference of least squares means was not confirmed in the case of the Education factor for the categories Post_Secondary and Tertiary_1 (p = 0.8234), Post_Secondary and z_Tertiary_2_3 (p = 0.4614) and also for the pair Tertiary_1 and z_Tertiary_2_3 (p = 0.5895). By the HT factor, the greatest similarity is between the pair 2A_1Ch and Other_0Ch, where the p-value is up to 0.9945. Than we can see non-significant differences of least squares means between 2Adult and 2A_1Ch (p = 0.5790), 2A_1Ch and 2A_at_least_3Ch (p = 0.9187), 2A_1Ch and Other_with_Ch (p = 0.4392), 2A_at_least_3Ch and 2Adult (p = 0.6960), 2A_at_least_3Ch and Other_0Ch (p = 0.9194), 2A_at_least_3Ch and Other_with_Ch (p = 0.4050), 2Adult and Other_0Ch (p = 0.5061), 2Adult and Other_with_Ch (p = 0.1250), Other_0Ch and Other_with_Ch (p = 0.3544) and between the pair 1A_at_least_1Ch and 1Adult (p = 0.4758). A few statistically non-significant differences can be seen in Figure 2 also with the Region factor, for example between the pair BB and NR (p = 0.7576), KE and PO (p = 0.1154), than between TT and z_BA (p = 0.9732), TT and ZA (p =0.3131), ZA and z_BA (p = 0.4298), TN and ZA (p = 0.7281), TN and TT (p = 0.2076) and also between the categories TN and z_BA (p = 0, 3079).

Figure Following on the next page

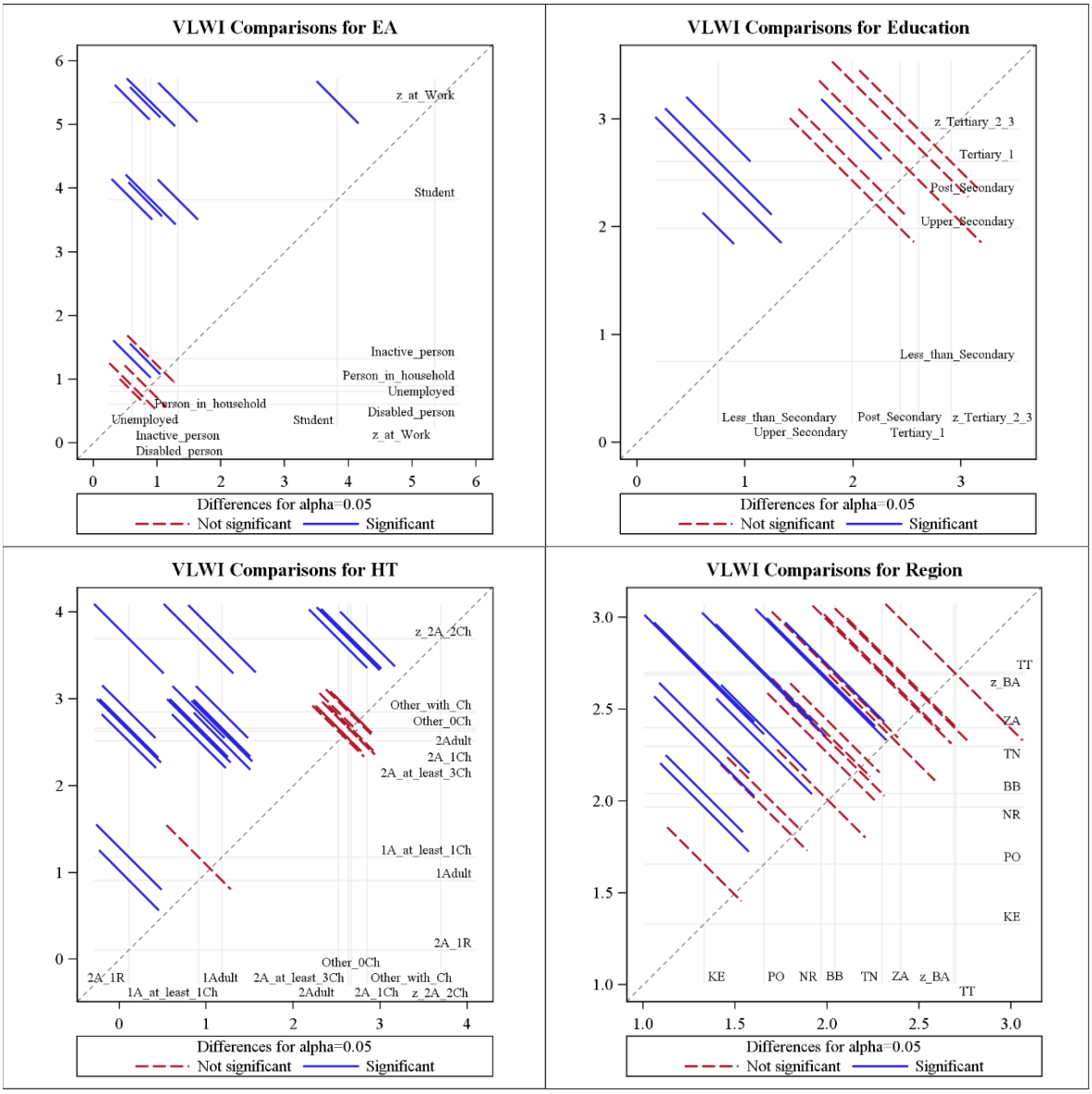

Figure 2: Interval estimates of the least squares means of the logit odds of VLWI depending on EA, Education, HT and Region factors
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

The statistical non-significance of the least squares means of the logit of chance between some categories led us to the assumption of their agreement. However, it is important to verify this assumption by using the CONTRAST statement within the LOGISTIC procedure. An important step is to define the null hypotheses, because the coefficients obtained by adjusting them are necessary for constructing the statement. Since we did not confirm the significance of the difference of least squares means between the categories Disabled_person (1 category of the EA factor), Person_in_household (3 category of the EA factor) and Unemployed (5 category of the EA factor) for the EA variable, we define the CONTRAST statement:

CONTRAST 'EA 1=3=5' EA **1 0 -1**, EA **0.5 0 0.5 0 -1**/ESTIMATE=ALL ALPHA=**0.05**;
whose coefficients are based on the following null hypotheses:

$$H_0\ (1): \mu_1 - \mu_3 = 0$$
$$H_0\ (2): 0{,}5 * \mu_1 + 0{,}5 * \mu_3 - \mu_5 = 0$$

Since, by defining the null hypotheses and at the same time quantify the CONTRAST statement, we wanted to verify the agreement of the least squares menas of the logit of the chance between the three categories of the EA factor, we can conclude on the basis of Table 5 that the p-value exceeded the level of significance (0.05), which implies that persons, who are disabled, unemployed or in household don't have a significantly different chance of facing the risk of very low work intensity.

Contrast Test Results			
Contrast	DF	Wald Chi-Square	Pr > ChiSq
EA 1=3=5	2	1.1811	0.5540

Table 5: CONTRAST statement for EA levels
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

We identically construct statements for the levels of the other three factors. For the Education factor (Table 6), we consider the agreement of the least squares menas of the logit chance between the categories Post_Secondary (2 categories), Tertiary_1 (3 categories) and z_Tertiary_2_3 (5 categories). For the HT variable, we don't need to agreement the least squares means of the logit of the chances between 1A_1Ch and 1Adult, because the p - value with the command LSMEANS clearly confirmed their agreement. However, the agreement between the categories 2A_1Ch (3 category), 2A_at_least_3Ch (5 category), 2Adult (6 category), Other_0Ch (7 category) and Other_with_Ch (8 category) will be verified again by defining the CONTRAST statement (table 7). The last of the most effecting factors is Region, where we verify existence a statistically non-significant difference of the least squares menas of the logit chance between the categories TN, TT, ZA and z_BA (Table 8).

Contrast Test Results			
Contrast	DF	Wald Chi-Square	Pr > ChiSq
ED 2=3=5	2	0.7086	0.7017

Table 6: CONTRAST statement for Education levels
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

Contrast Test Results			
Contrast	DF	Wald Chi-Square	Pr > ChiSq
HT 3=5=6=7=8	3	2.5724	0.4623

Table 7: CONTRAST statement for HT levels
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

Contrast Test Results			
Contrast	DF	Wald Chi-Square	Pr > ChiSq
REG 5=6=7=8	3	2.1593	0.5400

Table 8: CONTRAST statement for Region levels
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

P-values in all tables exceed any commonly used level of significance, which implies that people living in the cluster of the considered most similar categories of the Education factor (as well as HT or Region) don't have a statistically significantly different chance of facing the risk

of very low work intensity . Based on the obtained results of the contrast analysis, we concluded that the categories between which a statistically significant difference of least squares means of the logit of the chance was not confirmed can be merged and thus create a new category of the variable. The estimation of the model after the modification of the variables confirmed the validity of merging the individual categories. Odds ratios revealed that the following categories of factors are most at risk:

- by the EA variable, it is a newly created category formed by a cluster of three levels of the factor D_PH_UN – the chance of very low work intensity in the case of a person who is disabled/in the household/unemployed is 93.5 times higher than for an employed person,
- by the variable HT is the 2A_1R category - the chance of very low work intensity in the case of a person living in a 2A_1R household is 34.2 times higher than in the case of a person living in a household of two adults with two dependent children,
- by the Education variable is the Less_than_Secondary category – the chance of very low work intensity for a person with less than secondary education is 7.1 times higher than for a person with a post-secondary/tertiary education of the 1st, 2nd or 3rd degree,
- by the variable Region is the KE_PO category – the chance of very low work intensity for a person living in KE or PO is 2.6 times higher than for a person living in TN, TT, ZA or in BA,
- by the Marital_status variable is the Never_married category – the chance of very low work intensity for a single person is 1.6 times higher than for a married person,
- by the Health variable is the Bad category – the chance of very low work intensity for a person with a bad or very bad health status condition is 1.9 times higher than for a person with a good or very good health status,
- and by the Urbanization variable is the Intermediate category – the chance of very low work intensity for a person living in a intermediately populated area is 1.5 times higher than for a person living in a densely populated area.

3.2.1. Estimation of the probability of VLWI depending on EA and HT

Using the ESTIMATE statement, we will estimate in the following part the probability that a person will face a very low work intensity depending on the two most effecting factors of economic activity and household type, while the remaining factors will remain fixed at the reference level. We have replaced the original reference levels of individual factors with new categories, specifically those that we found to be the most critical in previous analyses. We quantified estimates only for the most critical and for the least critical category of EA and HT factors. By defining the first statement, we estimate the probability that a disabled/household/unemployed person (D_PH_UN - μ_1) living in a household 2A_1R (μ_1) will face very low work intensity:

- estimate 'EA1 HT1' intercept **1** EA **1** HT **1** / cl alpha=**0.05** exp;
  Than we estimate the probability that a disabled/household/unemployed person (D_PH_UN - μ_1) living in a 2A_2Ch household (μ_4) will face very low work intensity:
- estimate 'EA1 HT4' intercept **1** EA **1** HT **0 0 0 1** / cl alpha=**0.05** exp;
  In the same way, we estimate the probability that an employed person (at_Work - μ_4) living in household 2A_1R (μ_1) will face very low work intensity:
- estimate 'EA4 HT1' intercept **1** EA **0 0 0 1** HT **1** / cl alpha=**0.05** exp;
  and the probability that an employed person (at_Work - μ_4) living in a 2A_2Ch household (μ_4) will face very low work intensity:
- estimate 'EA4 HT4' intercept **1** EA **0 0 0 1** HT **0 0 0 1** / cl alpha=**0.05** exp;

Estimate										
Label	**Estimate**	**St Error**	**z Value**	**Pr > |z|**	**Alpha**	**Lower**	**Upper**	**Exp**	**Exp Lower**	**Exp Upper**
EA1 HT1	3.3034	0.3266	10.11	<.0001	0.05	2.6632	3.9436	27.2051	14.3425	51.6033
EA1 HT4	-0.2293	0.3641	-0.63	0.5289	0.05	-0.9428	0.4843	0.7951	0.3895	1.6231
EA4 HT1	-1.2350	0.3677	-3.36	0.0008	0.05	-1.9556	-0.5144	0.2908	0.1415	0.5979
EA4 HT4	-4.7677	0.4435	-10.75	<.0001	0.05	-5.6370	-3.8983	0.008500	0.003564	0.02028

Table 9: ESTIMATE statement for EA and HT factor levels
(Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

The result of the ESTIMATE statements is table 9, which provides a point estimate of the logarithm of the chance (Estimate), a point estimate of the chance (Exp), but does not directly provide a point estimate of the probability, so it is necessary to quantify this estimate using the following relations:

$$\hat{\pi}_i = \frac{Exp}{1 + Exp}$$

$$\hat{\pi}_i = \frac{27.2051}{1 + 27.2051} = 0.9645$$

In the case of a person who is disabled/at household/unemployed lives in a household of two adults, at least one of them is aged 65+, there is a 96.45% probability that will face very low work intensity, provided that the other factors are fixed at the reference (most critical) level. Figure 3 also confirms the result.

If a person is disabled/in the household/unemployed but lives in a household of two adults with two dependent children (second row in table 9), the probability of exclusion from the labor market is 44.29%, which is up to 52.16 pp lower than in the case of those persons who live in household 2A_1R.

$$\hat{\pi}_i = \frac{0.7951}{1 + 0.7951} = 0.4429$$

The least critical category in terms of the EA variable is the employed, while if we look at Figure 3, we see that the most risky are employed persons living in a household of two adults, one of whom is 65+ years old (22.53%).

$$\hat{\pi}_i = \frac{0.2908}{1 + 0.2908} = 0.2253$$

In the last statement, we estimated the probability of exclusion from the labor market in the event that a person is employed and at the same time comes from a household of two adults with two dependent children (the two least critical categories of EA and HT factors).

$$\hat{\pi}_i = \frac{0.0085}{1 + 0.0085} = 0.0084$$

As we can also see in the last row of Table 9 and Figure 3, the probability of being threatened by very low work intensity is 0.84%, under the condition that the other factories remain fixed at the most critical level.

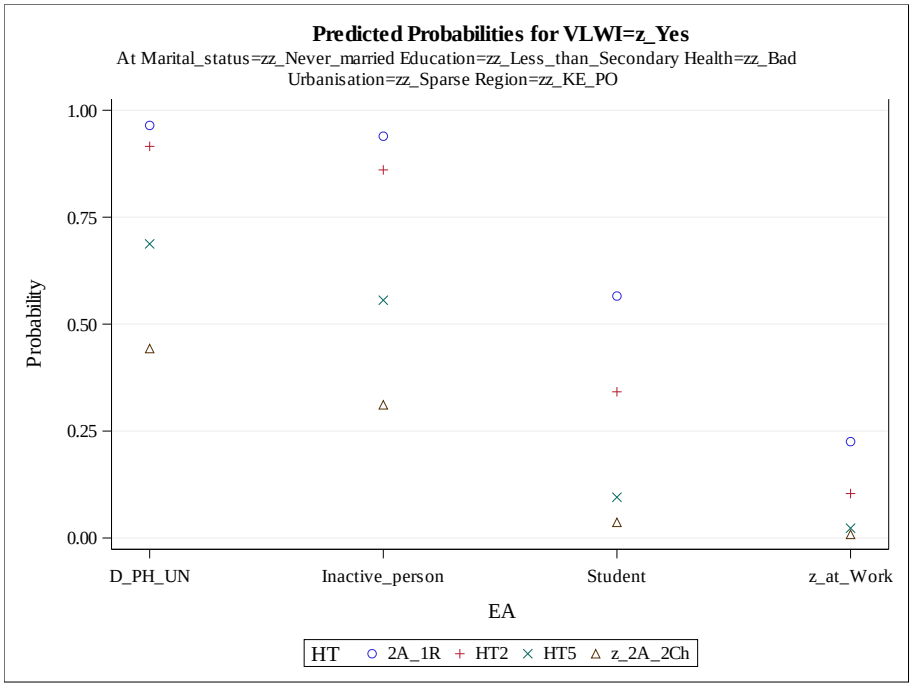

Figure 3: Probability of VLWI depending on EA and HT factors (Source: EU-SILC 2021, own processing in SAS Enterprise Guide)

4. CONCLUSION

The aim of the article was to point out the possibilities of using the LOGISTIC and GENMOD procedures in quantifying the effect of relevant factors on the very low work intensity of Slovak households. Using PROC LOGISTIC, we estimated a logistic regression model and based on the tests provided by the procedure, we could assess which of the significant factors has the greatest effect on the binary dependent variable VLWI. The maximum likelihood method was used to estimate the regression coefficients and their corresponding odds ratios, through which we could quantify the effect of the factor on the dependent variable. Statistical significance tests of the regression coefficients revealed that the odds ratios for some regression coefficients could not be considered different, which led us to a deeper analysis of the relationships between the factor categories. Using the GENMOD procedure and applying the LSMEANS statement, we found that for the four most effecting factors, in the case of some pairs of categories, a significant difference of least squares means of the logit chance was not confirmed. Given that the analysis of least squares means reveals the significance of the difference only between pairs of categories, when considering the agreement of several levels, we had to extend the LOGISTIC procedure by the CONTRAST statement. Using this statement, we verified the validity of the null hypothesis that the least squares menas of the logit of the chance for individual categories of the factor are not-significantly different. The result of the statement clearly confirmed the considered assumption, therefore we merged the most similar categories into one newly created factor category and thus replaced the four most effecting independent variables (EA, HT, Education and Region) with new modified factors. By extending the LOGISTIC procedure with the ESTIMATE statement, we quantified the probability estimate depending on the two most effecting factors of the model (EA and HT), so we estimated the probability that a person who is disabled/in the household/unemployed, or employed living in

the least critical, or the most critical type of household, will face exclusion from the labor market, while other factors remain fixed at the most critical level. Although in the article we present the reduction of categories only in the case of the four most effecting factors, in general it is possible to reduce the categories of the other factors as well. The inclusion of the CONTRAST statement in the analyzes has the advantage of revealing hidden and deeper relationships between categories, for example, merging fewer numerous categories into one new category results in a reduction of the standard error of the estimate of the least squares menas, and at the same time the results of the analyzes are clearer.

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THE ROLE OF WELLNESS IN DESTINATION BRANDING – A CROSS-COUNTRY ANALYSIS OF CROATIAN VS. MALTA'S ISLANDS

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ABSTRACT

Wellness in different forms is growing in importance in the lifestyles of many travelers, therefore the offer side is constantly innovating and increasing its appealing products and services. DMOs should support these providers in reaching their target markets, which represents the purpose of this paper. It is well known, branding is one of the key tools in communicating the attractiveness of a tourist destination. The main research question which reflects the aim is: how are DMOs incorporating the concept of wellness in their destination branding marketing activities? This problem is researched on the examples of Croatian and Malta island destinations.

Keywords: *wellness, destination branding, destination marketing, islands, tourism, DMO*

1. INTRODUCTION

The aim of this paper is to highlight the role and importance of wellness tourism in Croatia and how it is communicated to the public. The tourism sector captures 20 percent of Croatia's GDP (World Bank Group, 2022). Its advantageous location and natural beauty, with key national assets being the coast and sea, place Croatia as a strong competitor and attractive tourism destination. Croatia features a typical "sea and sun" tourism model with stays concentrated in coastal areas in the summer months. Therefore, seasonality is one of the major challenges of Croatia's tourism processes where wellness, as a tourism product, would play a crucial role in attracting tourists for a longer period of time. Such product, should be developed and established in most areas in Croatia. Wellness is often perceived in terms of physical health, but it is more than that. It is a holistic integration of physical, mental and spiritual well-being, where the nutrition of the body, mind as spirit are incorporated. There are several main dimensions to defining wellness: physical, psychological/emotional, social, intellectual, spiritual, occupational, and environmental (Foster et al., 2007). Factors like the aging population impacting the growing caregiving sector, trends about removing mental-health taboos but especially the pandemic making mental well-being a public health must are strengthening medical tourism product. Wellness is particularly important in the post-pandemic period: the World Health Organization Regional Office for Europe established an expert group on the mental health impacts of Covid-19 in the European region in order to address the increased psycho-social needs of its citizens. The Organisation for Economic Co-operation and Development has issued analyses and guidance on mental health in general and the pandemic's impact on mental health in particular (Scholz, 2021). Millennials are spreading awareness and taking responsibility for their health and the improvement of their substantial and spiritual well-

being is boosting the demand for wellness programs, especially in the hotel industry (Lee et al., 2019). Wellness should be analyzed as a strategic tourism product, that would extend the tourist season and positively reflect on the economy. Jónás-Berki, Csapó, Pálfi, and Aubert (2015) agree that the key wellness and medical tourism trends in the past years include a present and continuously growing awareness of health and healthy lifestyle, the innovation of tourism products (treatments and services) and the changes in customer behavior (lifestyle). Quality and availability of care have the greatest influence on medical tourism behavior, alongside economic and cultural factors (Connell, 2013). Before the COVID-19 pandemic, a total amount of almost 300 million wellness trips were done in Europe. Demand is high, resulting in a 20.9% increase each year until 2025 in the wellness tourism industry. The Global Wellness Institute includes two types of wellness trips:

- Primary wellness travel: when the destination and activities are primarily motivated by wellness
- Secondary wellness travel: when wellness is not the primary motivation for the trip, but where wellness affects choices regarding planned activities that are connected to the wellness lifestyle

It is interesting that secondary wellness tourism has a share of 92% when talking about wellness tourism trips and 90% of wellness tourism expenditures in 2020. In the period from 2017 to 2019, secondary wellness tourism had a steady increase and surpassed the rate of primary wellness tourism. Results show that secondary wellness tourism trips grew by 9.2% annually, while primary trips grew by 5.6%. It is known that wellness travelers spend more per trip than the average tourist; on average $1,601 per trip, meaning a significant 35% more than an average international tourist. The premium for domestic wellness tourists is $619 per trip, meaning 177% more than an average domestic tourist. When analyzing the wellness industry, an arising concern is a wide supply of and an insufficiently researched demand for wellness programs. The quality of wellness services offered is increasingly becoming the one decisive competitive factor. For this reason, quality management as well as good marketing, play an important role (Mueller & Kaufmann, 2001). The focus in this paper will be on the latter – marketing and effectively communicating the wellness offer of tourism destinations. Therefore, the key research question reads: How is wellness as an identity attribute used in branding? This problem will be researched in a cross-country analysis of Croatian islands and the islands of Malta and Gozo.

1.1. Wellness in tourism: focus on Croatia and Malta

It can be said that wellness tourism was introduced in Croatia with the first five-star hotel in Croatia, Hotel Milenij, Opatija in 2000. In relation to the further development of wellness tourism in Croatia, the Action Plan for the Development of Health Tourism of the Republic of Croatia states that there is no accurate data on the number of tourist facilities that offer wellness services in Croatia. It is challenging to gather data on the tourist facilities that offer wellness services since on the website of the Ministry of Tourism, Croatian Touris Board (HTZ) and Croatian Chamber of Commerce (HGK), the number stated varies from 80 to 200. What we can certainly say, is that wellness offers are largely coming from higher categories of four and five stars hotels. The majority are situated on the Adriatic coast, and mostly on the island of Krk, Rab, Lošinj, Hvar and Brač. As stated by the Lovran Wellness Academy, the offers consist largely by massage, sauna and pool programs, cosmetic care, and recreation, providing a limited number of services: nutrition, personal growth and development, and medical wellness. In addition to the standard services of massages, beauty treatments and saunas, in these complexes, however, great attention is paid to the pool facilities with systems of open and closed pools filled with thermal water.

Since the services are offered at a high level, it can be said that the Croatian wellness offer is internationally competitive. What is considered an issue it the fact that there is no regulation related to the professional and medical training of wellness staff (at different levels of expertise). Introducing medical components is limited due to the legal restrictions, leaving only a small part of the facilities being covered by the Brend standards. Such an approach represents a challenge in the development of the Croatian wellness tourism product. There was no data found for the percentage of dominantly wellness-motivated demand in the total number of overnight stays for no hotel. It can only be assumed that health-motivated wellness guests make up a smaller percentage of the total demand and that wellness is still perceived as just one of the usual hotel facilities and accompanying services as part of a differently motivated stay (Lovran Wellness Academy). Wellness hotels and resorts should invest more in the specialization and marketing of health information, individual care, and other cultural and relaxation programs (Mueller & Kaufmann, 2001). Six wellness-related lifestyle dimensions (diet, fitness, social interactions, cultural diversity, health awareness and personal development) were confirmed, and four segments emerged (high-level wellness, diet- and health-oriented, fitness-oriented and low-level wellness clusters). They differed in their travel motivation (Težak Damijanić, 2019). From the six aforementioned lifestyle dimensions related to wellness by Težak, Damijanić, four were the base of the qualitative analyses: diet, fitness, health and personal development. Malta is well known for its warm climate and picturesque beaches, making it a desirable destination for tourists in need of a relaxing and rejuvenating holiday. The island nation also offers a variety of wellness activities: yoga and meditation classes, spa treatments, and different fitness programs. Malta is also home to wellness centers and retreats that provide programs such as detox, weight loss, and stress management. The wellness centers are known to incorporate traditional Maltese therapies, such as thalassotherapy (seawater therapy) and phytotherapy (plant-based therapy) in the programs they offer. There is no published data regarding the number of wellness services that their hotels or centers are offering, but Malta has been making a name for itself as a wellness tourism destination for the past few years. The Mediterranean diet and lifestyle of its popular islands are often associated with its health benefits. Malta has a strong public healthcare system, which provides free services to all Maltese citizens and European Union residents that own a European Health Insurance Card (EHIC). The healthcare system is considered to be one of the best in Europe, which enforces and increases its appeal as a wellness destination. The World Health Organisation (WHO) Life expectancy at birth in Malta was 82.6 years in 2020 – the second highest in the EU and 2.0 years higher than the EU average (OECD, 2021) which can be attributed to the government allocating significant funds for healthcare services, equipment, and the training and wages of healthcare professionals.

1.2. Branding islands

According to McCall (1994), the research focusing on islands raised from the works of Moles (1982) and Depraetere (1990-1991, 1992) and grew into a special academic discipline (Baldacchino, 2003). It includes topics such as island economy, ecology, sustainability, culture, and branding (Graham, 2020). Butler (2012) highlights island tourism is more than tourism on islands, as it should encompass essential components and characteristics making an island worth visiting. Since the competition in tourism is growing, many destinations are using branding (Naidoo, Ramseook-Munhurrun and Durberry, 2012, Mommas, 2002; Marzano and Scott, 2009; Usakli and Baloglu, 2011; White and White, 2016), a complex interdisciplinary process involving different interests and stakeholders, to distinguish themselves and attract more visitors. In the early branding phase, the brand identity is often connected to the islands and water related themes (Lewis- Cameron and Roberts, 2010b, Butler, 2012), whereas warm water islands are usually more popular than cold ones (Graham, 2020).

A brand is a tool to create image and, in practice consists of several elements, the key ones being: name, logo and slogan (Varbanova, 2013, Konecnik Ruzzier and Ruzzier, 2015:73). The image is formed in the mind of the consumer based on marketing and non-marketing information, therefore marketing's action is limited (Gunn, 1988). Brands are based on establishing a unique brand identity to be conveyed to the public in the form of a logo and slogan, as important parts of a branding architecture (Beritelli and Laesser, 2018; Ceken and Ersan, 2017). Logos are "visual symbols intended to be widely recognized and impactful" (Graham, 2020); namely, effective logos tend to be simple, strong, memorable, and able to convey a strong message about the brand (Wheeler, Frost, & Weiler, 2011). Place branding, as in the case of island branding, applies the principles of branding consumer goods to geographical areas ((Briciu, 2013: Briciu and Briciu, 2016. Giuba, 2015) and it might be used for other purposes rather than just tourism such as to encourage foreign investments, exports or geopolitical agendas (Gnoth, 2002; Konecnik and Petek, 2012). Morgan and Prichard (2004) deem the right approach to branding islands could be umbrella branding to highlight the specificities of different micro-location on an island. Furthermore, destination branding should summarize the key travel experiences offered, form and reinforce the connection with customers and reduce travel search costs and risks (Blain et al., 2005:337). Despite islands being an increasingly popular research topic, there are not many studies related to the branding of islands (Matečić, Perinić Lewis, 2018). As far as Croatia is concerned, the island of Mali Lošinj is the first example of island branding in general (Matečić, Perinić Lewis, 2018), based on wellness attributes. Other islands that have been successful in branding are: Hvar, Korčula nad Brač. The island of Hvar is projecting the image of luxury, Korčula stands out for its cultural heritage, while Brač is oriented towards outdoor activities. The Maltese islands have successfully differentiated themselves by emphasizing their unique historical and cultural heritage, as well as their natural beauty. Malta has also been working to diversify its economy and promote investment in areas such as technology, finance, and education. The government of Malta has made efforts to attract international businesses by offering a favorable tax environment, support and excellent infrastructure. Malta also offers an ideal location for filming, with state-of-the-art film studios and experienced crew members (US department of state, 2021 https://www.state.gov/reports/2021-investment-climate-statements/malta/).

2. METHODOLOGY

The aim of this paper is to present and evaluate the place and role of wellness for tourism branding of Croatia. Wellness tourism is a strategic tourism product of the country thanks to its advantageous physical geographical characteristics and also its positive impacts on seasonality. We used secondary data sources and performed empirical desk research. In the Croatian case, the first step was to access the official regional tourist boards / representative DMOs of Croatia islands, namely: Istrian county (www.istra.hr/), Primorsko-goranska (www.kvarner.hr), Ličko-Senjska (visit-lika.com), Zadarska (www.zadar.hr), Splitsko-dalmatinska (www.dalmatia.hr), Šibensko-kninska (www.dalmatiasibenik.hr) and Dubrovačko-neretvanska county (www.visitdubrovnik.hr). There it was discovered that only the following islands have a wellness offer: Krk, Rab, Veli Lošinj, Mali Lošinj, Prag, Brač, Vis, Korčula, Hvar, Mljet. After that, we visited all the above official tourism boards' pages and checked if the logos and slogans of the sample of islands include one of the following elements: diet, fitness, health and personal development. During the research, it has been noted that the islands of Pag and Brač didn't have a unique tourist board to represent them. Therefore, the homonymous town of Pag was used as the reference tourist board, since Novalja is oriented toward youth tourism. In the case of Brač, the local tourist board of Bol, the most popular destination on the island was analyzed.

In order to assess if wellness-related elements are embedded in the branding architecture of the sample islands, the theoretical framework from Težak, Damijanić was used. Namely, from the six lifestyle dimensions related to wellness, the presence of four of them was analyzed in slogans of Maltese and Croatian islands: diet (D), fitness (F), health (H) and personal development (PD). In the case of Malta, the regional websites for the islands of Malta, Gozo and Comino were accessed through the national DMO website: visitmalta.com. The website acts as the official one for the region of the island of Malta. Gozo has its own website.

2.1. Croatia and Malta: Wellness-related data

Although Croatia is a larger and more populated country, with around 4 million citizens while Malta has around 465 000, the two Medditerean countries have similar architecture, economies and cultures. The two EU countries are rapidly becoming one of the most popular tourist destinations in Europe. Croatia might have a significantly higher number of arrivals when it comes to international tourism, beating Malta with 21,6 million of arrival vs 718 000 in 2020, but the GDP per capita in Malta is significantly higher with $33 257,4 than $17 398,8 in Croatia (World Bank national accounts data & OECD National Accounts data files, 2022). The two friendly touristic countries are both situated on the sea, heavily relying on tourism as one of the main contributors to the economy: Malta with 6.1% while Croatia with 11.4% of their GDP (Table 1.) are a perfect fit for a cross-country analysis.

Indicator	Details	Croatia	Malta
Receipts	International Tourist Receipts (in USD billion)	10.8	0.8
Expenditures	International Tourism Receipts (in USD billion)	1.1	0.2
Tourism as Exports	Tourism as a share of total Exports (in %)	27.5	3.7
Tourism GDP	Tourism as a share of GDP (in %)	11.4	6.1
Seasonality	Share of top 3 months in annual arrivals (in %)	79.0	52.0

Table 1: Tourism indicators comparison for Croatia and Malta in 2021.
(Source: The World Tourism Organization (UNWTO))

The biggest difference is that Croatia is a significant manufacturer and exporter while Malta a more service-oriented economy with their developed online casino industry. Still, their Financial system, human development, economic structure is similar, with tourism being the largest sector of their economies.

3. RESULTS

The results of the research regarding wellness presence in branding will be presented in the next tables. For the sake of brevity, the researched elements are abbreviated: diet (D), fitness (F), health (H) and personal development (PD).

Table following on the next page

Island and logo	Official website and logo	Slogan	Lifestyle dimension related to wellness in slogan	Explanation
Krk	https://krk.hr/	Golden island Krk	Yes	Gold might be related to all four elements
Rab	https://www.rab-visit.com/	The happy island	Yes	Happiness is related especially to PD and H but might as well apply to D and F
Veli Lošinj and Mali Lošinj	https://www.visitlosinj.hr/	Experience Lošinj, Lošinj 365, Island of vitality	Yes	Vitality is related to all four elements of wellness.
Pag	https://tzgpag.hr/en/	Pag, the island of stone enchantment	No	-
Brač	https://www.bol.hr/	-	No	-
Vis	https://www.tz-vis.hr/	-	No	-
Korčula	https://www.visitkorcula.eu/index-hr.html	Town of Marco Polo	No	-
Hvar	https://visithvar.hr/	Treat yourself with Hvar!	Yes	Pampering is related to all four elements of wellness
Mljet	http://www.mljet.hr/	Mistic oasis	Yes	An oasis is related to H, D and PD

Table 2: Wellness representation in branding – Croatia (Source: author's contribution)

Out of the ten analyzed Croatian islands featuring a wellness offer, five islands (50%) incorporate at least two wellness elements in their branding message. Two islands (Veli and Mali Lošinj) are represented on one official tourism website. Among the analysed 10 Croatian islands, wellness is branded as a key tourism product only in the case of the island of Mali Lošinj, where it represents its key brand identity. The wellness tourism offer on Croatian islands is mainly based on a few hospitality facilities with wellness centers and spas aimed primarily at catering to tourists. The analysis for Malta's islands is presented below in Table 3.

Island	**Official website and logo**	**Slogan**	**Lifestyle dimension related to wellness in slogan**	**Explanation**
Malta	https://www.visitmalta.com/en/ VisitMalta	More to explore	Not specifically accentuated	-
Gozo	https://www.visitgozo.com/ Visit Gozo	Experience Gozo	Not specifically accentuated	-
Comino	-	-	-	-

Table 3: Wellness representation in branding – Malta
(Source: author's contribution)

The islands of Malta and Gozo (Comino is almost inhabited), don't accentuate wellness-related elements in their place branding strategies, even though they boost pretty complex wellness tourism products, whereas many of them are high-end products of renomated providers, in line with the latest trends. However, Maltese islands promote separately wellness at the national level as a branded tourism product under the name "Wellbeing and health" and it is tight closely to the lifestyle of the population.

4. CONCLUSION

Branding is one of the key marketing processes that makes tourist destinations recognizable on the international tourist market and contributes to their competitive diversification. In this paper, the role of wellness in the place branding of the island was investigated in the case studies of Croatia and Malta. The conducted research led to the conclusion that wellness is a part of the tourist product on the Croatian islands, but it is less developed than in Malta. Despite this, wellness is more communicated in the branding of the Croatian islands compared to Malta. On the example of Malta, it is possible to talk about a branded tourist offer of wellness. Namely, wellness is promoted at the national level as a separate tourist product called "Wellbeing and Health", which unites several renowned brands and completes the overall tourist offer of that country. In this sense, Malta can serve as an example for Croatia in the development of the branding of tourism offers of this nature (practical implication). Their integration of wellness into the lifestyle of local establishments is especially commendable. Namely, the meaning of branding should be not only in the function of tourism, but the projected brand should be agreed with or co-created by the locals, and should contribute to other non-touristic goals for the benefit of the local population. The limitations of the research are linked to the small sample: it refers to a comparison of the islands of two countries. Furthermore, the research was conducted using the observation method, thus recording errors and subjectivity during data analysis are possible, since the results are based on the interpretation of authors.

Future research should go beyond the stated limitations and analyze the topic more deeply using an interdisciplinary approach. From the theoretical implications, the following stand out: showcasing different approaches to branding the same product in different cultural contexts and considering the importance of wellness as a tourist product. It was concluded that with specific branded products and branded tourist offer it is possible to influence national tourism, its competitiveness and positioning.

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A SYSTEMATIC LITERATURE REVIEW TOWARD CONCEPTUAL MODEL ON THE INTERRELATION BETWEEN THE IMPLEMENTATION OF SUSTAINABILITY INTERVENTIONS IN ROAD FREIGHT TRANSPORT AND ITS ECONOMIC PERFORMANCE

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ABSTRACT
Given its advantages, road transport remains the most widely used mode of freight transport in the world (notably the high density of the global road network and the flexibility of delivery that it allows (Renan Stenico de Campos, 2019). Road freight transport (RFT) is therefore a crucial element of global economic growth. However, the increasing expansion of use is mainly coupled with economic, environmental and social challenges. Thus, the issue of RFT sustainability has gained increasing interest from academic researchers and managers, especially to address sustainable development while maintaining or even enhancing the economic performance of RFT activities. In this regard, the current study seeks to establish a better understanding of the interrelation between sustainability interventions and economic performance in the RFT. To this end, we conducted a systematic literature review (SLR), leading to the development of a conceptual model and research hypotheses (based on of previous studies' limits), to be tested, and validated in a further quantitative research step, particulary in the Moroccan context. In this SLR, 235 articles between 2015 and 2022 were included, analyzed (descriptive and bibliometric analysis) and synthesized. The main findings indicate that RFT sustainability literature is rich with a huge emphasis of interventions and mechanisms to enhance sustainability dimensions. Furthermore, the implementation of sustainability interentions in RFT has an effective impact on its economic performance, with the positive influence of "Dynamic Capabilities", juged essential to deploy these interventions, as well as the negative moderating role of "barriers of implementation".
Keywords: *sustainability interventions, road freight transport, sustainable road freight transport, economic performance, systematic literature review, conceptual model*

1. INTRODUCTION

Sustainability, sustainable development, and sustainable transportation issues have recently gained a growing interest (Litman and Burwell, 2006). The concept Sustainability is defined as *"the fulfillment of the needs of current generation in a responsible manner with a conscious effort and awareness such that the future generations are also able to fulfill their needs".* It corresponds to three main pillars : Economi, Environment, and Social; witch usually referred as the "3P: People, Planet and Profits" (Becker, 2014, p29; Brundtland, 1987). As for sustainable transportation, it consists of ensuring that environmental, social, and economic considerations are factored into decisions about the transportation activity (Litman and Burwell, 2006, p. 333; Most, 1999).

The Road Freight Transport (RFT) remains the most widely used as it is easy to organize. It is flexible, reliable, fast and relatively cost efficient (El Yaagoubi *et al.*, 2022). However, RFT has been continuously envolving in a growing pressure from customers and suppliers, tough delivery times, and many regulations and policies with intense competition (Avril *et al.*, 2021) in the sector and also among other modes. All these factors lead the RFT to face multiple economic, environmental, and social challenges. As a matter of fact, among all the transportation modes, RFT is one of the significant sources of pollutant emissions worldwide, contributing 62 % of the global emissions (Fulzele and Shankar, 2022). This is due to the consumption of fossil fuels, mainly diesel, that causes greenhouse gas (GHG) emissions, which provoke serious human respiratory problems (OECD, 2010). Thence, road transport contributes to to two major global public health challenges: air pollution and climate change (Wang *et al.*, 2020). Beside this, RFT is warmful for human health through the caused noise pollution[1]. In addition, RFT is considered as a major source of road accidents, as the number of victims of which is constantly increasing (Gnap *et al.*, 2021). With regard to the economic impact of RFT, the price of goods is likely to rise with the increase in the costs associated to transport operations (Fulzele and Shankar, 2022), given that the cost of transport varies between 10% and 20% of the total cost of the product (Rodrigue, 2020). These charges are generally related to vehicle depreciation insurance, and registration and various variable charges (namely parking, road tolls, fuel, maintenance, and weight carried) (Litman, 2021). Talkin about United Nations Organisation's Sustainable Development Goals (SDGs), RFT can contribute to Agenda 2030 towards SDG 2 (zero hunger), SDG 7 (energy efficiency), SDG 8 (decent work and economic growth), SDG 9 (sustainable infrastructure and industrialization), SDG 11 (sustainable cities and communities), SDG 12 (sustainable consumption and production), and SDG 13 (climate change) (Fulzele and Shankar, 2022, SDGs-UN.org, 2018). To face the previously mentioned challenges, several interventions and mechanisms trends were introduced in order ot integrate sustainability into the RFT. Indeed, introducing sustainability practices in business is not necessary because of the normative obligation (policy and regulations). But actually, it coincides to their interest to satisfy key stakeholders and impact on the competitiveness (Maletic *et al.*, 2015), as wel as the enhancement of economic performance. In this regard, there is a curial need to understand better the iterrelationship between sustainability interventions implementation and economic performance in RFT. Therefore, this research aims to establish a better understanding of this linkage through a systematic literature review, leading to the development of a conceptual model and related research hypotheses, to be futher empirically tested and validated by the means of a quantitative method research approach. In thereby, this study addresses an important research question formulated as follow: what is the impact of sustainability interventions on economic performance in RFT?
Hence, our specific objectives are threefold:

- to explore trends in sustainability interventions in RFT;
- to determine the dimensions of economic performance in RFT;
- to understand the interrelation between sustainability interventions integration and the economic performance in RFT.

The current paper is structed as follow: we first generally addressed the link between sustainability and economic performance in section 2; next, we detailed the adopted methodology in section 3; then, we presented the results in section 4; we discussed more supplimantary points in section 5 to be integrated in the proposed concepyual model and related research hypotheses in section 6.

[1] World Health Organisation, 1999.

2. THEORICAL LINK LINK BETWEEN SUSTAINABILITY INTEGRATION AND ECONOMIC PERFORMANCE

The concept of performance has become a multidimensional concept, measured not only by means of financial ratios and profit margin. It's a catch-all term that ultimately only makes sense in the context in which it is used. Moreover, it is "the aggregation of economic, social and environmental performance", which is called also global performance. (Saulquin and Schier, 2007; Issor, 2018). Many previous studies agreed with the close link between economic performance and sustainability (T. Liu *et al.*, 2021). As a matter of fact, (Mellado and Lou, 2020) claimed that the integration of sustainability principles through the ICT promotes performance improvement through waste reduction, resource optimisation and process improvement, therefore, maximising performance not only in economic aspects, but also in social and environmental terms is of major importance. (Kang and Kim, 2017) confirmed that sustainability strategies and practises can not only reduce negative impacts of a firm's activities, but also simultaneously contribute to enhance firm performance, and by doing so, achieve a competitive advantag. According to (Figge and Hahn, 2012), environmental strategies are just another way of increasing economic value creation by subordinating to financial outcomes, especially through its eco-efficiency. Moreover, they concluded that companies can identify strategies that create economic and environmental value and help to maximise the contribution to sustainability rather than to economic capital efficiency alone. Socio-efficiency is also underlined by (Young & Tilley, 2006. p 404) as a social objective that contributes to the economic development while enhancing quality life of "the workforce and their families as well as of the local community and society at large".

3. METHODOLOGY

the current study aims to establish a better understanding of the interrelation between sustainability interventions and economic performance within the RFT activities. To this end, we performed a Systematic Literature Review (SLR) leading to the development of a conceptual model and related research hypotheses. The present section presents the adopted methodology.

3.1. Research scope

Through this SLR, we aim to answer the following sub-research question:

1) What are the main interventions to implement RFT sustainability?
2) What are the dimensions of the economic performance in RFT?
3) What is the impact of sustainablity interventions on thd economic performance in RFT?

3.2. Research stategy for the SLR

This sub-section give details about the adopted research strategy for the SLR, which is adapted from Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines

3.2.1. Papers identification

First, a search string was developed to be used to identify papers on the selected databases (which are the widely-used digital sources for their pertinence: Web Of Science and Scopus). To this, we determined the main keywords in research questions and different related keywords and integrated them using boolen operators ''AND'' and ''OR'', as showed in the table 1. This phase was addressed through two stages. We first identified papers dealing with sustainability in RFT. Then, we added papers dealing with both RFT sustainability and economic performance. The objective is to record rich bibliography in order to answer previously mentioned research questions.

Sector	("road freight" OR "road freight transport")
RFT sustainability	("road freight" OR "road freight transport") AND ("sustainability" OR "stainable development" OR "economic" OR "environmental" OR "social")
RFT sustainability and economic performance	("road freight" OR "road freight transport") AND AND ("sustainability" OR "stainable development" OR "economic" OR "environmental" OR "social") AND ("economic performance" OR "efficiency" OR "efficacity" OR "effectiveness" OR "productivity")

Table 1: Developped research strings
(Source: authors)

3.2.2. Papers selection

The papers selection phase consists on search results filtering, using the following inclusion criteria:

Included papers must be:

- Ic1: published between 2015-2022; (the choice of research period is justified by the marking included event, which it is the United Nations Agenda for Sustainable development commitment);
- Ic2: written in English;
- Ic3: articles, review article, conference papers ;
- Ic4 : related to research subject (by reading title, keywords and abstract).

The summary of record is shown in Figure 1.

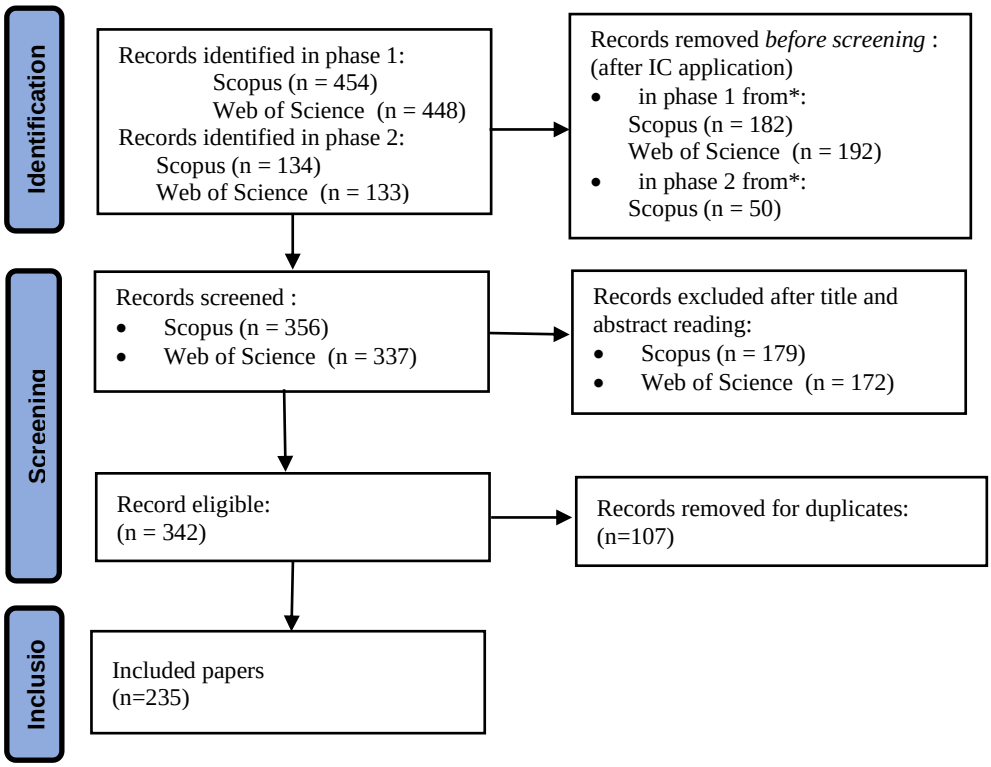

Figure 1: SLR flowchart
(Source: PRISMA flowchart adapted and filled by authors)

3.3. Content analysis methodology

Concerning the content analysis, we first carried out a descriptive (papers distribution by year and journal) and bibliometric analysis (keywords co-occurrence and authorships), in order to

give a prileminary overview of the included papers in this SLR. Then, we proceeded to content synthesis in order to answer the initially identified research questions. The content synthesis was reported by thematic, corresponding to the research question:

- sustainability interventions in RFT;
- Economic performance dimensions in RFT; and
- The impact of sustainability on economic performance in RFT sector.

The objective through this review is to identify the potentail variables to be included in the conceptual model with related research hypotheses, in order to fill the identified gap from literature.

4. RESULTS

This section presents the main findings from the SLR.

4.1. Descriptive analysis

The objective of this sub-section is to give a preliminary overview of the distribution of publications from two perspectives, namely: by year and by journal. As shown in figure 2, we can deduct from the distribution of papers by year that there is a rising interest about RFT sustainability and its economic performance issue over time. Except that there is a decrease in the number of papers published in 2019 that can be explained by the coincidence with the health crisis related to covid 19.

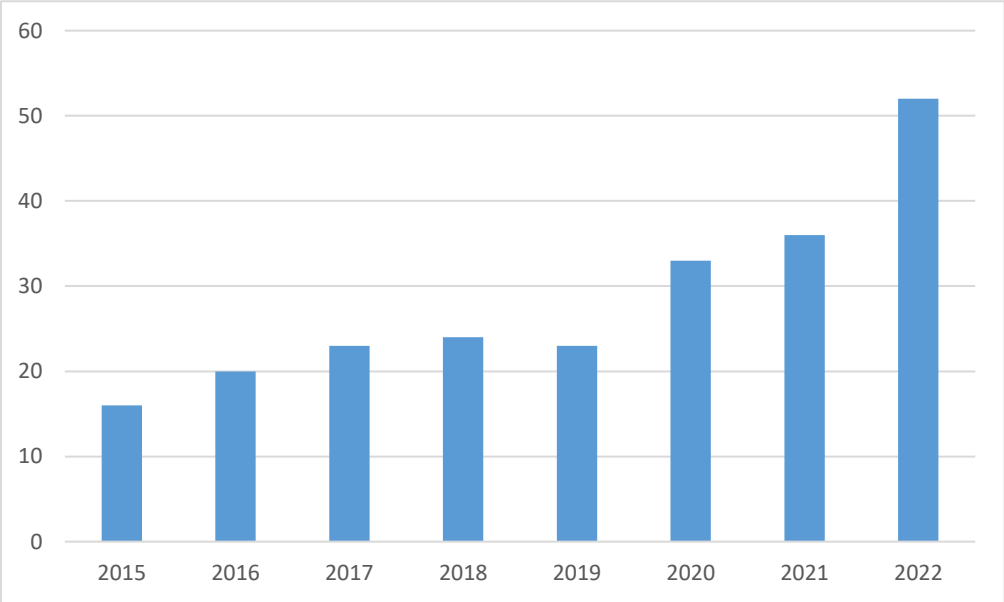

Figure 2: Papers distribution by year
(Source: by authors based on generated megadata from included references)

Publications are distributed in a wide range of journals (n=200). Figure 3 shows journals that contributed to this review. The top 10 are presented as follow: *Sustainability* (n=30), *Journal of cleaner production* (n=10), *Sustainability (Switzerland)* (n=9), *Transportation Research: Transport and Environment* (n=6), *Environmental Science and Pollution Research* (n=6), *International Journal of Environmental Research and Public Health* (n=5), *Transportation research Procedia* (n=4), *Transportation research part a-policy and practice* (n=4), *Transportation Research: Policy and Practice* (n=4), *Research in Transportation Business and Management* (n=4) and *Energies* (n=4).

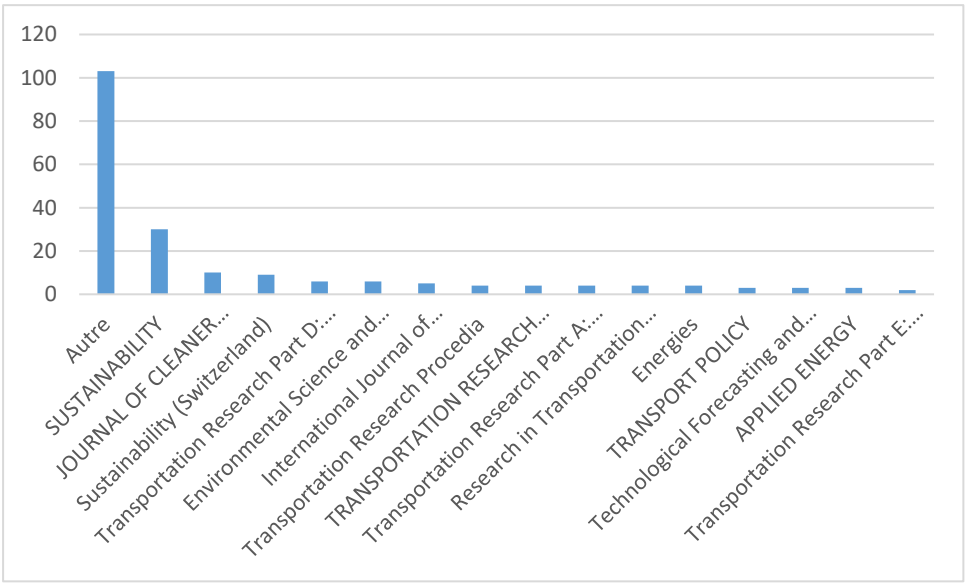

Figure 3: Papers distribution by journal (most important)
(Source: by authors based on generated megadata from included references)

4.2. Bibliometric analysis

VOSViewer software was used to visualize the keyword co-occurrence network within the included papers. A total of 189 keywords, with a frequency ≥ 3 of co-occurrence, were selected among 1658 keywords, as illustrated in Figure N°4.

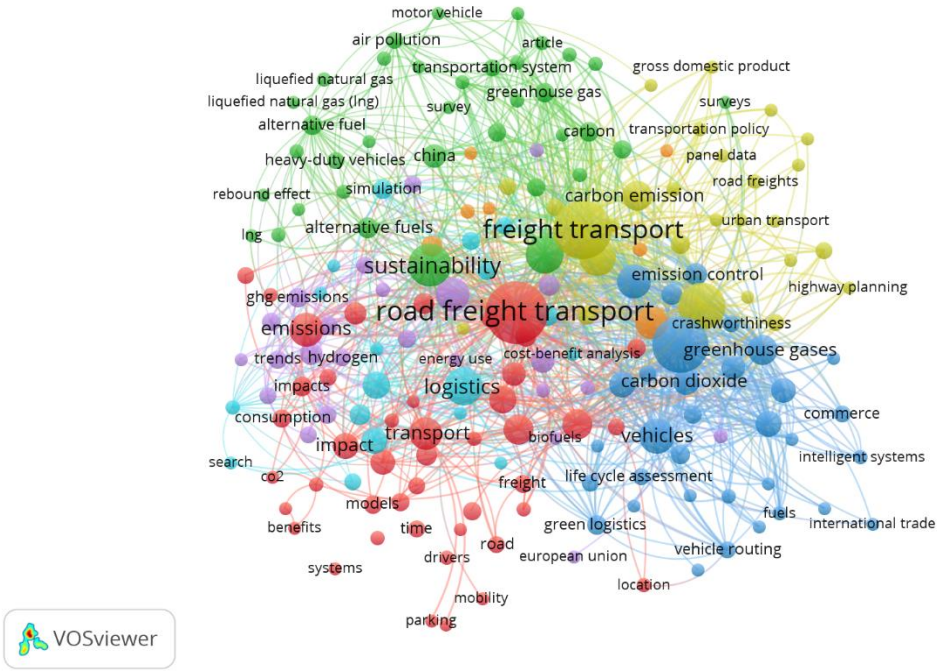

Figure 4: Keywords co-ocurrence
(Source: by authors using Vosviwes software, based on generated megadata from included references)

Seven clusters (group of keywords) were identified. Nevertheless, they don't reflect a unified and clear meaning. Thence, we can provide the following table of keyword groupings according to the main keywords of this research. We collected keywords which have strong co-occurrence.

Vehicle	Heavy duty vehicle, truck, heavy goods vehicle, light duty vehicle, commercial vehicle
Road Freight Transport	Freight transport, road transport, transportation system, routing, road network
Emissions	Decarbonization, carbon footprint, hydrogen, CO2 emission, Carbon emission, GHG emission, CO2 mitigation, CO2 reduction, greenhouse gas emissions, GHG emission, emission control
Fuel	Fuel consumption, fuel efficiency, alternative fuel, biofuel, diesel
Energy	Energy efficiency, energy consumption, bio energy, energy utilization
Electrification	Electric vehicle, battery electric vehicle
Digitalization	Information systems, ICT, big data, analytics,
Sustainability	Sustainable development
Environment	environment protection, environmental impact, climate change, green, decarbonization, energy
Social	Social effect, traffic congestion, employment
Economic	Efficiency, costs, external costs, optimization, economic growth, management, indicators, effectiveness, efficacity, economic analysis

Table 2: Keywords classification by groups
(Source: by authors)

VOSviewer also provides an overview about authorships that have collaborated together around the subject. The network in figure 5 indicates that only 12 authors among 713 have met the criteria of having a minimum number of publication equal to 3. It illustrates 6 clusters. Each cluster in the co-author network represents a collaborative community, but three authors have 3 publications with 0 link strength (Poliak M, Machado PG, Vassalo J.M). However, we notice the high performance of: Ller-sasteresa E (4 publications, 7 links), Osorio-tejada J.L (4 publications, 7 links), Haavikko H (3 publications, 6 links), Karha K (3 publications, 6 links), Palander T. (4 publications, 6 links), Scarpellini S (3 publications, 6 links). Etc.

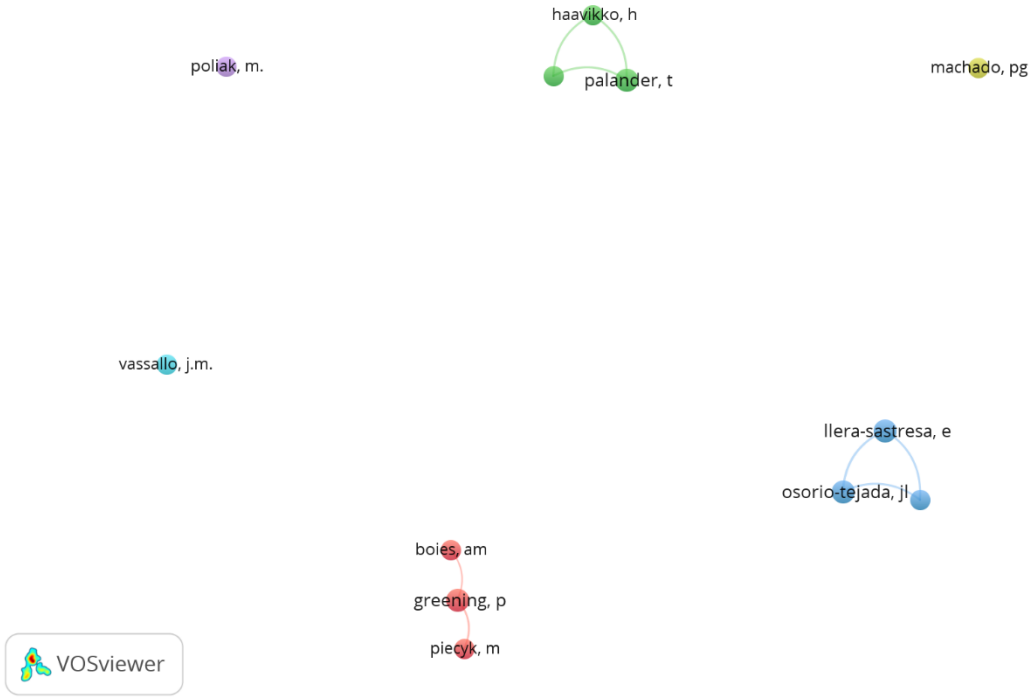

Figure 5: Co-authorships network illustration
(Source: by authors using Vosviwes software, based on generated megadata from included references)

4.3. Content synthesis

This sub-section addresses previously mentionned research questions by brievely reviewing the included references.

4.3.1. Sustainability interventions in RFT

Road Freight Transport (RFT) activities are confronted with diverse challenges that link into the three sustainability dimensions as addressed through the framework developed by (Lalendle, Goedhals-Gerber and Van Eeden, 2021). Refering to this study, RFT activities should:

- Socially: take responsibility for full social costs (the cost of air pollution, congestion, and crashes), consider stakeholders concerning decisions affecting them directly, Provide and maintain safe systems of work and keen to decrease the number of annual fatalities;
- Environmentally: decrease emissions, minimizing waste and consumption of natural resources, and promote their use in an ecological and sustainable manner and implement policy that supports sustainability initiatives resources conservation for future generations;
- Economically: increase productivity and profitability, increase operational efficiency; be capable to meet demand with competitive offers and prices and boosts socio- economic development.

By reviewing included papers, we conclude that there is a growing interest towards RFT sustainability with diverse approachs and mechanisms, used to mitigate related imapcts. Referring to (Tob-Ogu *et al.*, 2018, p.6), sustainability interventions mechanisms in RFT can be classified by six themes: operations, policy, ICT, decoupling, modality and 'others'.
Following this classification, we provide table 3, including non exhaustive examples among included references.

Theme	Category	References
Operations theme aims to optimize RFT though several mechanisms (fleet management, fuel type, routing and costs optimization…).	Routing optimization	(Dudgeon *et al.*, 2015; Li *et al.*, 2016; Schröder and Cabral, 2019)
	Reducing traffic volumes through warehouse re-locationing	(Pinchasik *et al.*, 2019)
	Alternative fuel	(Osorio-Tejada, Llera-Sastresa and Scarpellini, 2017a; Shanmugam, Tysklind and Upadhyayula, 2018; Gómez Vilchez *et al.*, 2022)
	Electrification	(Taefi *et al.*, 2016; Schulte and Ny, 2018; Stopka *et al.*, 2020; Gallo and Marinelli, 2022; Haugen *et al.*, 2022)
	Energy efficiency	(Llorca and Jamasb, 2017a, 2017b; Palander, Haavikko and Kärhä, 2018; T. Palander *et al.*, 2020)
Policy concerns State driven mechanisms for addressing road freight challenges.	Green tax	(Serrano-Hernandez and Faulin, 2019; Jiang *et al.*, 2022)
	Crossing borders policies	(Kundu and Sheu, 2019; Pinchasik *et al*., 2020)
	Social regulation	(Poliak, Beňuš and Lăzăroiu, 2022)
The **modality** theme includes the combination with or substitution of RFT with other modes of transport ('co-modality', 'multimodality' and 'synchro /intermodality').		(Kelle *et al*., 2019; Chen, Wu and Zong, 2020; Daduna, 2021; El Yaagoubi *et al*., 2022; Ferjani *et al.*, 2022)
Decoupling strategies established as national or supranational policy approaches to separate economic growth priorities from freight.		(Alises and Vassallo, 2015; Parker, 2022; Chovancova, Popovicova and Huttmanova, 2023)
ICT theme includes information systems (IS) and information technology (IT), used within RFT activities.		(Wang, Rodrigues and Evans, 2015; Tob-Ogu, Kumar and Cullen, 2018; Moros-Daza *et al.*, 2019; Budak and Sarvari, 2021)
The **"Other"** interventions include performance tools land use and infrastructure.	Parking lots organization	(Poliak & Poliakova, 2021); (Poliak *et al.*, no date); (Poliak et al., 2020); (Gnap & Kubíková, 2020)
	Road transport infrastructure	(Gnap *et al.*, 2021)
	Risk management	(Clement *et al.*, 2018; Dadsena, Sarmah and Naikan, 2019; Kumar Dadsena, Sarmah and Naikan, 2019)
	Corporate responsibility and green initiatives adoption	(Duranovic *et al*., 2016; Sureeyatanapas, Poophiukhok and Pathumnakul, 2018; H. Liu *et al.*, 2021)

Table 3: Sustainability intervention in RFT with examples from included references (Source: by authors)

4.4. Economic performance dimensions in RFT

In this research, we consider achieving economic performance among RFT activities involve reaching the specific financial and non-financial objectives and results over a specific period of time. Following this, and refering to included papers, we can provide table 4 classifying objectives of RFT economic performance by two dimensions, namely financial and non financial performance.

Dimension	Strategic goal	Objectives	References
Financial performance	Increase profitability	Increase **Profit Margin**, **Return on Equity** (ROE) and **Return on Assets** (ROA)	(Parihar and Dasari, 2022, p.1066); (Liachovicius, Skrickij and Podviezko, 2020)**;** (Lalendle, Goedhals-Gerber and Van Eeden, 2021)
Non-financial performance	Contribute to socio-economic growth	Increase **Market share** (measured by customer portfolio), Increase **No. of employees**	(Lalendle, Goedhals-Gerber and Van Eeden, 2021); (Guo, Chen and Liu, 2022); (T Palander *et al.*, 2020); (Osorio-Tejada, Llera-Sastresa and Scarpellini, 2017b); (Engholm, Pernestal and Kristoffersson, 2020); (Noll *et al.*, 2022); (Gandhi, Kant and Thakkar, 2022); (Kedzior-Laskowska, 2019); (Oliveira et al., 2020)
	Increase Operational efficiency	Optimize **transport costs** (including vehicle procurement, maintenance, staff salaries, fuel prices, and road charges); Better **flexibility** in terms of order size, departure timing and commodity composition; Increase **energy efficiency**; Reduced **empty leg kms**; Reduce **GHG emissions**.	
	Competitiveness	Stregh **customer relationships**; Emprove **quality of service**: Offer **competitive prices**; Integrate **Technological tools.**	

Table 4: Economic performance objectives in RFT
(Source: by authors)

4.5. Impact of sustainability interventions on the economic performance in RFT

The interactions between integrating sustainablity interventions and the economic performance in RFT have received considerable attention in the literature, from many perspectives. For example, (Kedzior-Laskowska, 2019) addressed the existence of a strong positive correlation between quality and competitiveness of RFT services and the factors that potentially affect them. The basic attributes of quality in road freight transport include safety and timeliness of delivery. Focusing investments on the quality attributes will contribute to the improvement in competitiveness (and effectiveness of business activity). The results proved that the most important factors in creating quality of road freight services include, among others, eco-driving, information technologies, transport policy, technical condition of vehicles and ensuring the safety of transportation processes. (Budak and Sarvari, 2021) underlined the impact of the integration of sustainability in the RFT sector to maintain profitability by using its resources efficiently. Accordingly, pricing and profitability have become prominent features in many areas of transportation by considering sustainability factors (economic, social and environment). Besides, (Duranovic *et al.*, 2016) claimed that corporate responsibility in road transport is positively affecting economic efficiency, profitability and competitiveness of all the partners in the supply chain. Additionaly, (Wang, Rodrigues and Evans, 2015) indicated that the use of ICT in RFT increases its environmental sustainability, flexibility, efficacity, efficiency and competitiveness.

5. DISCUSSION

The implementation of sustainability interventions among RFT firms envolves allocation of tangible and intangible resources and capabilities. However, to the best of the authors' knowledge, resource allocation for prioritization of freight sustainability improvement projects, is missing from the literature. In fact, firms' bundles of resources and capabilities provide a competitive advantage as long as they are *valuable* and *rare*, and for such advantage to be sustainable over time, they must also be *inimitable* and *non-substitutable* (VRIN)[2] (Barney, 1991). Accordingly, possessing VRIN resources is regarded as a necessary but insufficient condition for Resource Value Creation. Indeed, value is rather created when resources are evaluated, manipulated and deployed in new synergetic transformed or reconfigured resources (Lippman and Rumelt, 2003; Sirmon *et al.*, 2011). According to (Amit and Schoemaker, 1993, p.35), capabilities "refer to a firm's capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end. They are information-based, tangible or intangible processes that are firm-specific and are developed over time through complex interactions among the firm's resources". Following (Parmigiani and Howard-Grenville, 2011), capabilities can further be categorised either as Ordinary/operational Capabilities, which are associated with typical, day to day operations within the company, or Dynamic Capabilities (DCs), regarded as those that involve creation and change. According to (Teece, 2007), DCs consist of the firm 's capability to sense, seize, and transform (reconfigure) all tangible and intangible resources, skills, and capabilities to guarantee sustainable success. In line with this last theoretical view of DCs as a multidimensional construct, we propose that the DCs for sustainability implementation in RFT are composed of three sub-capabilities, namely: (1) Sensing Capacities, (2) Seizing Capacities, and (3) Reconfiguring (Transformational) Capacities. The first, sensing capacity relates to identifying and shaping new opportunities in the environment. Secondly, seizing capacity refers to addressing those new opportunities through new products, processes or services. Thirdly, Reconfiguring capacity relates to maintaining competitiveness through transforming and recombining a firm's resources (Teece, 2007). In this research, we consider DCs as firms' abilities to sense and seize new opportunities to pursuit and address economic, environmental and social competences for the implementation of sustainability interventions in RFT and then reconfigure them to enhance the economic performance. Besides, we cannot neglect existing barriers of sustainability interventions implementation withing RFT. Many previous studies have addressed barriers to sustainability in diverse pprespectives. We can mention research works of (Álvarez Jaramillo, Zartha Sossa and Orozco Mendoza, 2018) who identified lack of resources, high initial capital cost in implementing sustainability measures and lack of expertise as the most widespread barriers to sustainability in SMEs. Moreover, (Steenberghen and López, 2008) identified barriers to implementation of alternative fuel in RFT such as: financial barriers related of high costs of implementation, lack of specific legislation and safety certification provides nowadays a major barrier to the introduction of alternative fuels, lack of technical information... Furtherlore, (Orji *et al.*, 2019) addressed the challenges that hinder freight logistics sustainability. Four dimensions were identified: Management and organizational (including Insufficient management support and commitment, Lack of available funds, Poor knowledge of implications and Incompetent workforce in adopting eco-innovation practices); Social and legal (including Improper communication and collaboration amongst logistics partners, Poor legal framework...); Technological (including Lack of technology integration, Poor technology infrastructure and facility...); and Strategic (including Lack of improvement culture, Unavailability of research and development on adoption of eco-innovation...).

[2] Moreforwards on Resources Based View theory.

6. CONCEPTUAL MODEL AND RESEARCH HYPOTHESES DEVELOPMENT

Based on performed SLR and supplymental discussed points, the conceptual model presented in Figure 6 shows the expected causal dependencies between the three variables DCs (the three sub-capabilities), sustainability interventions, as well as the economic performance.

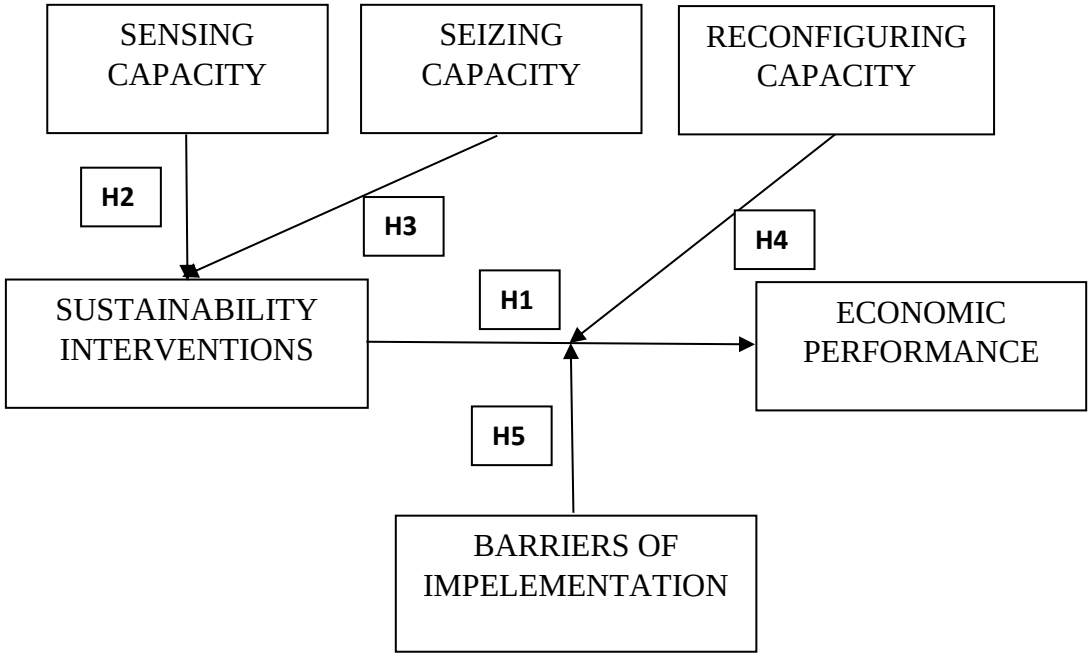

Figure 6: Proposed conceptual model
(Source: by authors)

Doing so, the model illustrates the role of DCs to achieve the economic performance in RFT through sustainability interventions. While the Sensing and Seizing capacities are expected to work towards *building* the sustainability interventions in RFT relevant for its economic performance, the reconfiguring capacity is working towards *exploiting* these interventions, and therefore act as a moderator between the sustainability interventions (endogenous variable) and economic performance in RFT as outcome (the exogenous variables). Hence, both the DCs and the sustainability interventions in RFT are seen as important factors that influence the economic performance in firms. Moreover, barriers of implementation act as moderating variable but with nigative influence. Based on this, we provide bellow research hypotheses:

- **H1:** "sustainability interventions" positively impact "economic performance";
- **H2: "**sustainability interventions" is positively mediating the relationship between "sensing capacity" and "economic performance";
- **H3: "**sustainability interventions" is positively mediating the relationship between "seizing capacity" and "economic performance";
- **H4: "**reconfiguring capacity" is positively moderating the relationship between "sustainability interventions" and "economic performance";
- **H5: "**barriers of implementation" is negatively moderating the relationship between "sustainability interventions" and "economic performance".

7. CONCLUSION AND FURTHER RESEARCH PATHS

Through this study, we tried to establish a better understanding of the interrelation between sustainability interventions and economic performance in RFT by performing a SLR leading to the development of conceptual model and research hypotheses. By brievely reviewing included papers, we found that there is a growing interest towards sustainability implementation in RFT

through diverse interventions and mechanisms. Six themes of interventions, leading towards filling economic, social and environmental challenges, were identified: operations, policy, decoupling, modality, ICT and others, with examples from included references. Besides, we highlighted the economic objectives of RFT, which can be classified by financial and non-financial dimensions of the economic performance. Further, we found that implementing of diverse sustainability interventions positively affects the economic performance of RFT. In light of these findings, more supplimentary points were discussed. In fact, firms shall develop DCs to favorably exploit available resources and capabilities to Sense and Seize potential sustainability opportunities in order to build sustainability interventions whithing RFT activities; and therefore, Reconfigurate them to enhace the economic performance. Moreover, we emphasized the negative effect of barriers of implementation of sustainability interventions. The presented conceptual model and research hypotheses in this paper opens paths for the subsequent quantitative analyses in order to test the developed theorical dependencies between the given variables. Besides, more research are needed to develop items to measure different icluded latent variables and constructs. Furthermore, the possible future research directions forward to morely investigating implementing DCs applied for sustainability and economic performance.

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ENTERPRISES IN CROATIAN CONSTRUCTION SECTOR – NEW CHALLENGES AND POSSIBILITIES

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ABSTRACT

The construction sector in Croatia generates around 5% of Croatian GDP directly, which situates Croatia in the group of European Union (EU) countries with the highest percentages of the sector in the gross domestic product (GDP). The percentage is even higher if it is considered its indirect impact through business activities for which it created the infrastructure. The importance of the sector is also seen through the number of employees in the sector that makes a percentage of 8% in total employment in the country. In the 20 years period the construction sector in Croatia has been through different stages characterized by ups and downs as the reflection of the situation on European and global market, but in the last few years before the COVID – 19 pandemics, it has shown signs of recovery after the global crisis. So, the aim of this paper is to compare the business activity differences regarding the number of enterprises in construction sector, the number of their employees and financial performances, in pre COVID – 19 year and during COVID – 19 years. The analysis will be made using the data from Croatian Financial agency (Financijska Institucija – FINA). Furthermore, the article will also analyse the situation in the selected construction firms in Croatia in the mentioned period. The presumption is that the COVID – 19 pandemics did not have a negative impact on the construction sector in the selected period because of its specific characteristics. Taking in consideration the events that occurred in Croatia in the last few years, that were conditioned by human or nature factors which increased demand for construction services, should also confirm the presumption. Recommendations for enterprises and entrepreneurial environment improvement are given according to the results.

Keywords: *construction sector, COVID – 19, Croatia, entrepreneurial environment, enterprises*

1. INTRODUCTION

The construction industry has more than 100 million jobs worldwide and make 6% of global GDP, while the added value of the construction industry accounts for about 5% of GDP in developed countries, and 8% of GDP in developing economies (United Nation Environment Programme, 2021). In the world the biggest opportunity in construction sector is rising investments in the renewable energy infrastructure, which can be achieved by using new technologies as autonomous construction vehicles. As in other industry, also this sector is changing. That shows the green construction that refers to the practice of using sustainable building materials and also construction processes with the goal of creating energy - efficient buildings that have minimal environmental impact. The COVID – 19 pandemics that was felt worldwide in 2020 has shaken the world economy, but the construction sector reacted differently due to it specific characteristics. In Croatia the construction sector makes 5% of Croatian BDP and 8% in total employment which is significant indicator for forecasting economy dynamics. In the time of pandemics, new rules were made for the economy, including some practical like distancing between workers. Except the pandemics, also different turbulence in the enterprises' environment have influenced business activities. Production firms have especially felt the influence of material price increase, long delivery time and expensive transport.

So, the initial shock of COVID – 19 pandemics have been deepened by the problems in supplement chain, lack of materials. For some enterprises that meant quitting some projects, because they could not deal with all these influence factors. In Croatia this situation has also been influenced by the natural catastrophe, the earthquakes in Zagreb and Petrinja in 2020, which were reflected at the construction market and firms that are directly and indirectly connected with it. The construction sector involves a lot of stakeholders and other productions such as furniture, materials, metal and wooden, transport, that creates a multiplicative effect. In the last years along with the price rising/lacking of materials, comes the deficit of the work force, then was usually imported from eastern neighbour countries, but now also here the situation has changed and workforce is requested from Asian and African countries. Croatian government has made some efforts to alleviate the impact of these shocks on the market by adopting the Conclusion regarding the disturbances in the prices of construction materials and products. The Conclusion was adopted in June 2021 (Narodne novine, 150/11., 119/14., 93/16. i 116/18). It should try to resolve the situation in which the construction firms can't respond on market demands, the demands of investors. Having in mind the first case of COVID – 19 virus in Croatia at the beginning of 2020, the aim of this paper is to compare the business activity differences regarding the number of enterprises in construction sector, the number of their employees and financial performances, in pre COVID – 19 year and during COVID – 19 years (2020, 2021). For the research purposes were used the data from Croatian Financial agency (Financijska agencija – FINA). To have a better overlook on the construction sector, the research will focus on five selected firms in construction sector that had the biggest revenue in 2021. The hypothesis is that the COVID - 19 pandemics did not have a negative impact on the Croatian construction sector in the selected period because of its specific characteristics like the time period of construction process.

2. ENTREPRENEURSHIP AND CONSTRUCTION SECTOR

Entrepreneur is a person who takes the risk and makes the profit; as a reward for taking this risk and dealing with uncertainty (Knight, 1921). For Schumpeter (1934) the main function of the entrepreneur is to make a new combination of production inputs, so they don't need to create new technologies or organizations, they just need to overcome the resistance which appears against the introduction of inventions and innovations. That entrepreneurship is not only connected with the terms as innovation, risk and uncertainty, shows Baumol. He conceptually links entrepreneurship with (Baumol, 1983): appreciation of entrepreneurial opportunities and encouragement of entrepreneurial initiatives; strategic orientation of the company and strategic planning, affirmation of managerial structures and changing the control mechanisms of production factors. That the resources are important part of entrepreneurship, thinks Casson, who defines it as a process of evaluation and decision making regarding the use of limited resources (Casson, 1982). On the other hand, Stevenson, Roberts and Grousbeck (1998) think that entrepreneurship is running for business opportunities, no matter the resources which are available to them in that exact moment and which they control; important is that there is any kind of resource in combination that gives them a chance. Moreover, entrepreneurship is important for social and economic development of an economy. The dynamics of an economy is defined by opening and running new businesses which bring new jobs, increase incomes and add value by introducing new ideas, technologies and products to society (Hill et, 2022). Audretsch i Keilbach (2004.) concluded that the entrepreneurial capital is a significant factor that effects output and productivity. So, no matter in which sector, entrepreneurship is the vital part for the development of a country. In this paper the focus, as said before, will be on the construction sector in Croatia. The word *»construction«* has its roots in the Latin word construere, which is composed of two words; »*com*« which means »*together«*, and »*struere«* which means »*to accumulate«* (Van Geert, 2015).

Construction can be defined as the process by which material, equipment and machines are used to assemble into a permanent object (Al Mana, 2006). But construction can also be seen as the economic activity. So, the construction sector can be defined as all production activities that contribute to the production of the built environment (the final product) and then grouping the contributing activities of each stage to the transformation of natural resources into the final product (Graham and Gruneberg, 2000). How to succeed in construction industry has also it specific rules. Looking at the traditional approach to success in the sector, important is to focus on the ability to plan and execute projects (Abraham, 2003) with the parameters like quality, cost and time (Hughes, Tippett and Thomas, 2004). Factor that also influence the success of enterprises in this sector are company's management systems and practices (Lussier, 1995). The factors can also be divided in the success factors in small and big enterprises; in small companies in the United States of America the factors were quality workforce, honesty, good subcontractors, costumer communication, reputation and finishing projects on time (Hutchings and Christofferson, 2001). For some authors, implementation of accounting systems and regular review of financial statements were very important for the success of the enterprise (Gerstel, 1991). In cases of recessions, governments invest in construction to boost development and employment (Polenske and Sivitanides (1990). Construction sector has a special place in economy as is connected to every other aspect of it, through making them inputs, which is its output. Also, one important characteristic of construction sector it's the expensiveness of its output due to many stages and persons involved.

2.1. Construction sector in Europe

The construction sector in European Union plays an important role by making around 9% of EU gross domestic product (GDP). The sector employs 18 million people through direct jobs and has 3 million enterprise (European Commission, 2022a). To boost construction the European Commission adopted the communication and action plan known as Construction 2020 which links initiatives at EU, national and industry levels to: stimulate favourable investment conditions; improve the human-capital basis of the construction sector, resource efficiency, environmental performance and business opportunities; strengthen the internal market for construction and foster the global competitive position of EU construction enterprises. Analysing the enterprises structure in construction sector, it is visible that on European levels, 99.9% of the European construction sector is composed of micro, small and medium-sized enterprises. Furthermore, the micro enterprises display the biggest part of the sector with 94.1%. The construction sector in Europe is not only oriented on creation of new buildings – residential, commercial and industrial; but also on the maintenance and repairs. The countries in Europe that have the biggest share of construction in GDP are Austria (7,2%), Lithuania (7%) and Finland (6,9%) (Statista, 2023). Inflation, material shortages, war are some challenges for the sector future. So, trends in mentioned sector will easily and fast turn depending on situation on the market as it was in the time of COVID – 19 pandemics.

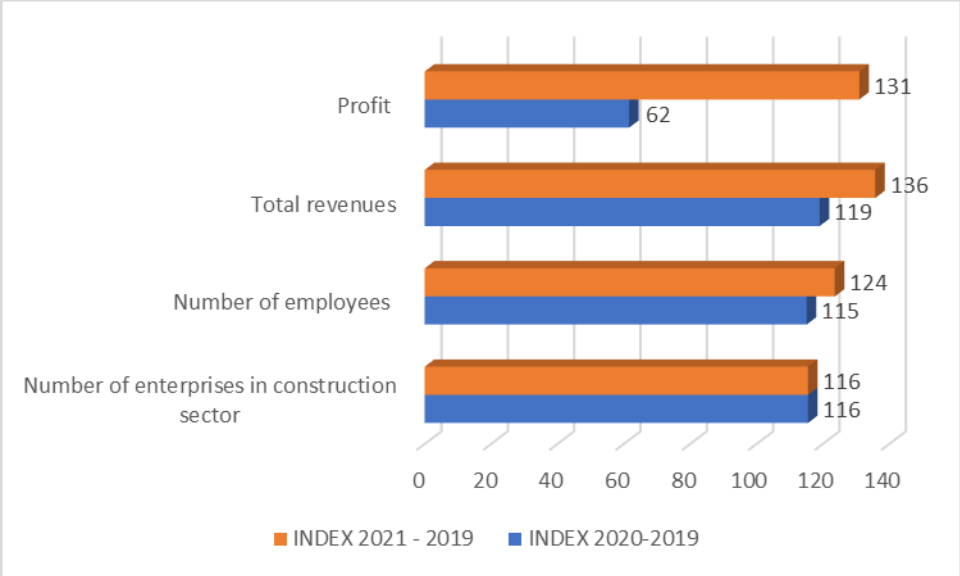
2.2. Construction sector in Croatia

Like in other European countries, also in Croatia, the construction sector has changed accordingly to the happenings in the entrepreneurial environment. In the past period, there were three significant stages in the sector; from 2000 to 2008 the expansion phase, followed by recession till 2014, and then again expansion till the COVID - 19 pandemics which has slow down the process. The sector which has characteristics of production and services, has a strong impact on economic development. In Croatia the number of enterprises in this sector decreased by 11.6% over the period between 2010 and 2020. The reason was the fall in the number of enterprises in the manufacturing sub-sector (-26.6%), followed by the narrow construction (-16.4%) and the real estate activities (-4.9%) (European Commission, 2021b).

The volume index of production in the broad construction sector showed an increase of 24.2% over the period of 2015 to 2020. In the same period the sector has had the increase of turnover of 9,8% (European Commission, 2021b). The large housing demand in Croatia, increased house pricing and led Croatian government to adopt the Subsidised Loan Programme to provide housing to its citizens. Also, due to earthquakes and need for renovation, Croatian Recovery and Resilience Plan (RRP) has allocated 591.4 million Euros for the renovation of buildings of total of 763.9 million Euros.

3. METHODOLOGY AND RESEARCH

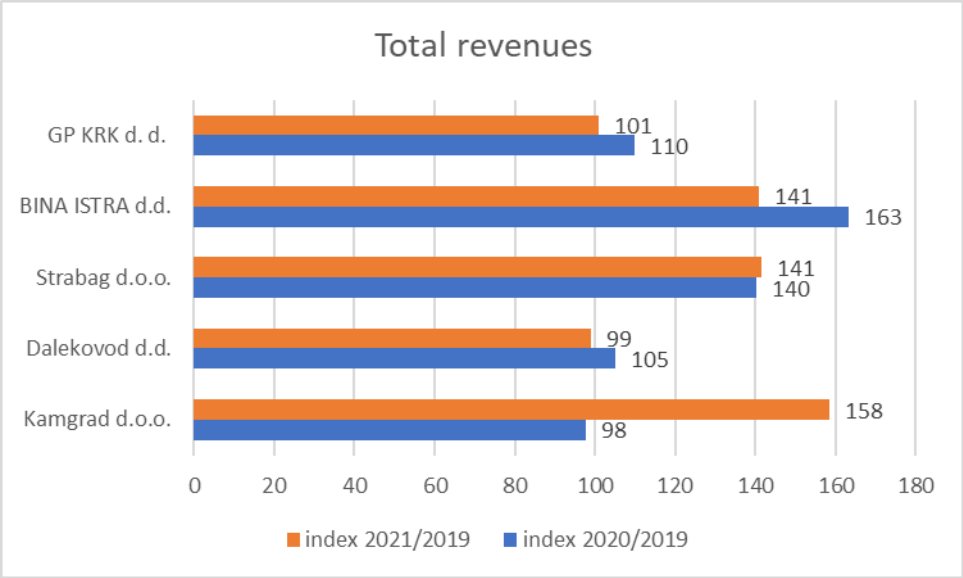
In the research are used the data from Croatian Financial Agency (Financijska Agencija – FINA) for the enterprises obligated to public disclose financial reports. The base year is 2019, as the pre COVID – 19 pandemic year, followed by two COVID – 19 pandemic years 2020 and 2021. The construction sector was analysed through the number of enterprises and their employees in the selected years together with their profits and total revenues. For this cause was calculated the index 2020/2019 and 2021/2019 regarding the mentioned indicators. Except the index comparation for construction sector, it was also made a comparation for the biggest firms regarding revenues in 2021, who are doing business in Croatia for more than 5 years. The results are presented in the graphs bellow.



Graph 1: Comparation of indexes for Croatian construction sector (Source: author's contribution)

From Graph 1 is visible that the number of enterprises has not changed in the pandemic years, so the index is the same, and shows the increase of 16% in number of enterprises that are obligated to public disclose financial reports regarding the year 2019. Index of number of employees shows the rise of 15% in 2020 and 24% in 2021 regarding the year 2019. Which is a sign that there was a need in both years for employees in this sector, no matter the pandemics, due to specific characteristics of the projects in the sector, like the timeframe of the projects. In the 2020 regarding the 2019, the total revenues index showed the increase of 19%, while in 2021 the increase of 36%. The situation is not the same in profits index, in 2020 the index was 62, that indicates the fall of 38%, so, here was felt the pandemic impact. The situation was better in the following year 2021, when the profit index was 131, so there was the increase in profit for 31% regarding 2019.

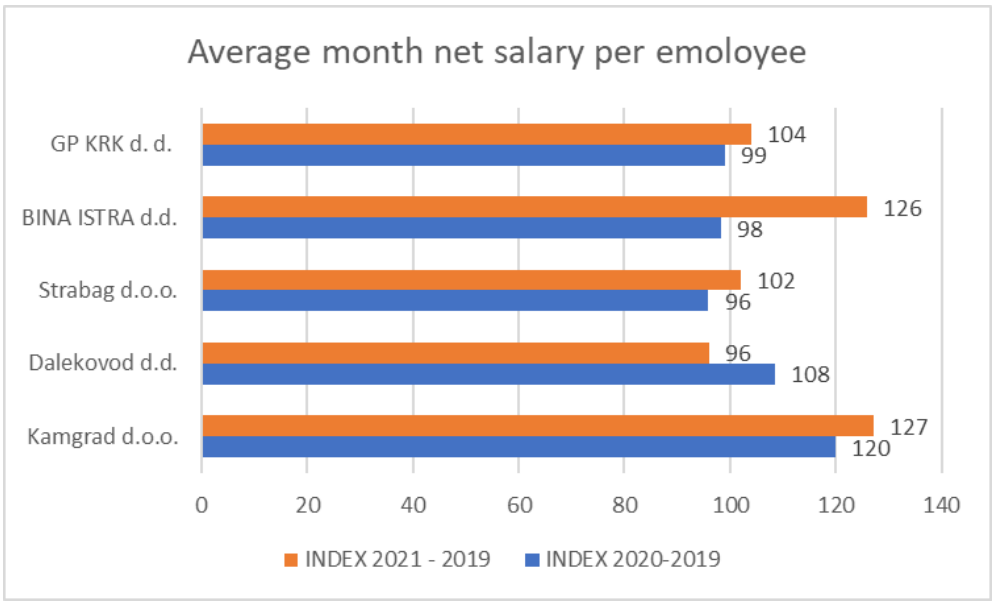
To see the concrete trends among the entrepreneurs in the sector, the research analysed the financial performances of five biggest enterprises in the sector regarding total revenues in 2021 that where active in Croatia for more than 5 years. That firms are: Kamgrad, Dalekovod, Strabag, Bina Istra and GP Krk. The biggest revenues in 2021 had Kamgrad 232.596.663 Euros and the smallest of these five, GP Krk 91.903.438 Euros. After the calculation of total revenues indexes for 2021 and 2020, the comparation has been done (Graph 2). Kamgrad with the total revenue index 2020/2019, 98, had a decrease of 2% regarding 2019, in the following year its index was better and showed the rise of 58% regarding pre pandemic year (2019). Dalekovod showed beater results in the 2020 than 2021, when it had the increase of 5% regarding 2019. The indexes for Strabag showed the rise of 40% in 2020 regarding 2019 and of 41% in 2021. Both enterprises, Bina Istra and GP Krk had better 2020/2019 indexes than for 2021/2019. In 2021 Bina Istra showed the rise of 63%, while GP Krk of 10%.



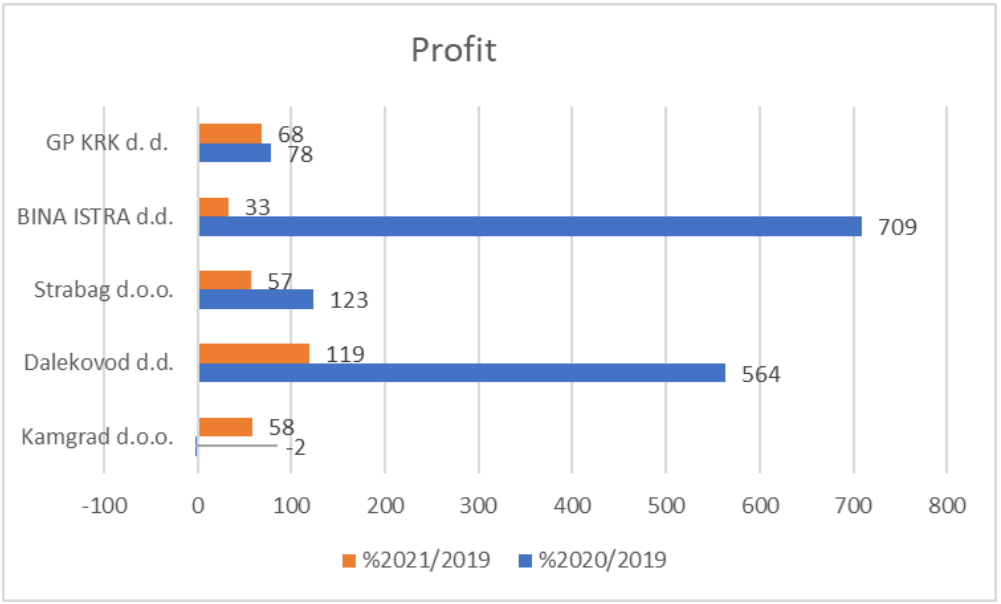
Graph 2: Total revenues index comparation
(Source: author's calculation based on FINA data)

The average month net salary per employee in 2021 varied from 1100 Euros in GP Krk to 2400 Euros in Bina Istra. The index showed (Graph 3) that four of five selected enterprises had the bigger positive rise in 2021 than 2020 (Kamgrad 27% in 2021 regarding 2019, Strabag 2%, Bina Istra 26% and GP Krk 4% for the same indicator). Dalekovod had highest growth in 2020 than 2021 regarding the pandemic year (index 2020/2019 was 108 – rise of 8% regarding 2019, and index 2021/2019 was 96, decrease of 4%).

Graph following on the next page

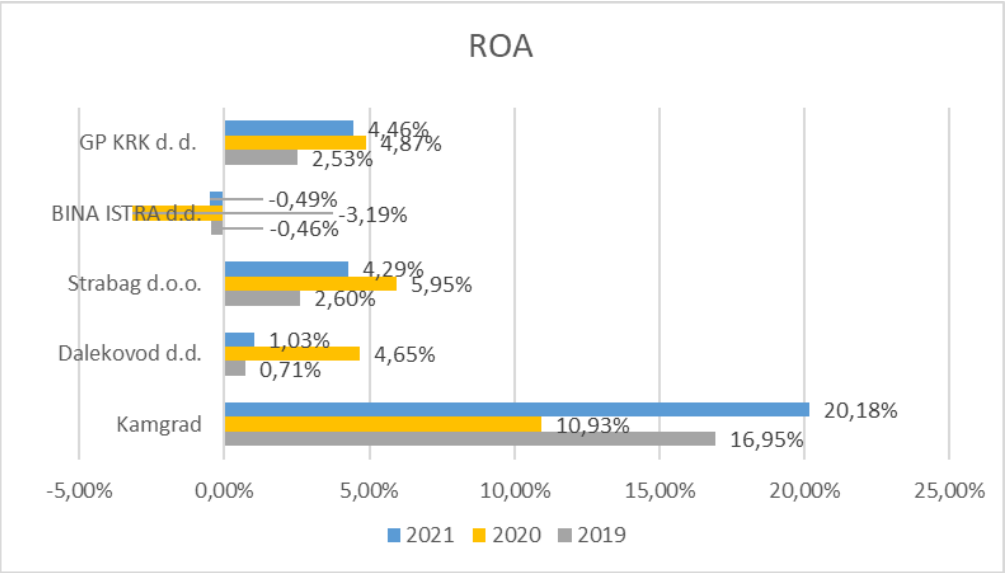


Graph 3: Average month net salary per employee index comparation
(Source: author's calculation based on FINA data)

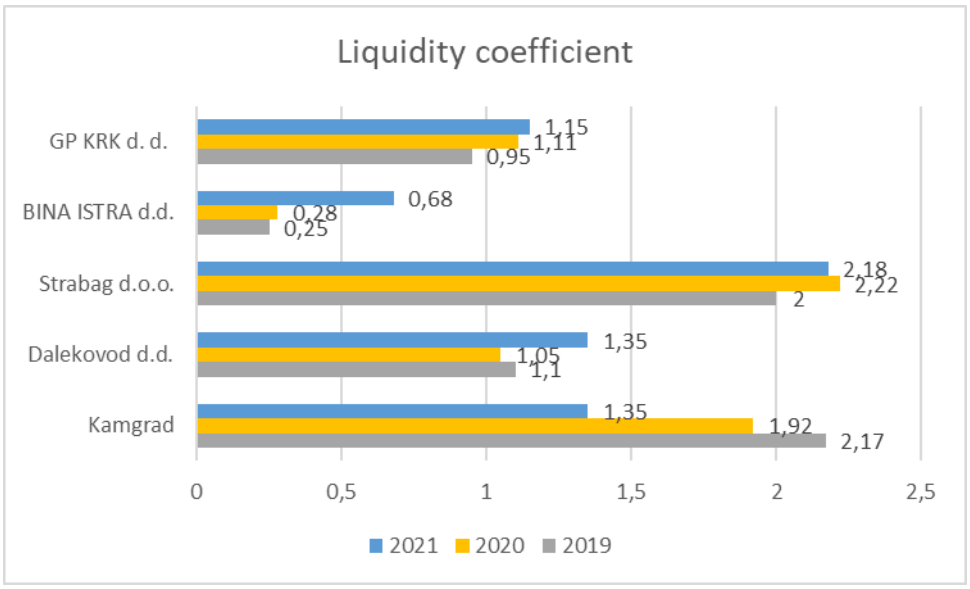


Graph 4: Profit growth rate comparation
(Source: author's calculation based on FINA data)

The index for profits of selected construction firms shows that two of five firms had better results in the first pandemic year 2020 than in second (Graph 4). The exception is Kamgrad, with the negative rate in 2020 of -2% in comparation with the second pandemic year, 2021, with the rise of 58%. Furthermore, Bina Istra was operating with the loss in the selected three years, so the growth rate shows the rise in loss. The figure bellow (Graph 5) shows profitability of total assets – net ROA for three years; 2019, 2020 and 2021. Kamgrad has showed the best results in all three years. The 2021 ROA 20,18% shows its great possibility to gain profit compared to 10,93% in 2020 and 16,95% in 2019. GP Krk, Strabag and Dalekovod had better ROA in 2020 than 2021 and for GP Krk and Strabag is around good 5%. Bina Istra has the negative ROA due to loss in the pre pandemic and pandemic years.



Graph 5: ROA comparation
(Source: selected data from FINA)



Graph 6: Liquidity coefficient comparation
(Source: selected data from FINA)

Liquidity coefficient higher than 1 shows that an enterprise is in a good standing and that it is able to meet all its current liabilities. Kamgrad, the enterprise with highest revenues in 2021 had the best coefficient in 2019. In the following years it declines from 2,17 to 1,35, but is still a good ratio (Graph 6). Dalekovod has improved the coefficient in 2021 and it's also better than in 2019, while for Strabag the situation is opposite. The rise of the coefficient in 2020 from 2 in 2019 to 2,22, has been followed by the decline in 2021 to 2,18; although these are the best enterprise coefficients in the selected group. In the similar situation regarding the trends of the coefficient are GP Krk and Bina Istra. The Bina Istra coefficient is above 1.

4. DISCUSSION AND CONCLUSION

Overall looking at the construction sector in Croatia, has shown that in fist pandemic year, the results in the sector where in small decrease, but in 2021 the results were better, it was even improved the profit result which had decline 38% in 2020.

The construction sector with its multiplicative effect through direct and indirect impact, employment of domestic and foreign workforce, influence on trends on capital market, development of new technologies, innovations, is a vital part of every economy including the Croatian one. Due to its high impact it can also have an effect on trends in production cycles. So, the COVID – 19 impact was not felt so much, only shortly, due to corona measures like restricted people movements, …. On the other side, the period has brought problems with high construction material prices. Initially, the situation did not look so good for the sector, but the number of issued building permits turn the sector forecast. In the 2021 there were issued around 10.000 building permits that is 12% more than in 2020 (Croatian Bureau of Statistics, 2021). The biggest share had permits for buildings that are apartments, while the rest of construction permits refer to other buildings, such as roads, railways, pipelines, bridges. The demand for new apartments has raised after the earthquake in Zagreb which is a big market. So, the results and statistics showed that the construction sector in 2021 has risen; enterprises with five or more employees had an average of 12.3% more workers on construction sites and 12.7% more hours worked on construction sites than in 2020. The performed work value per employee on construction sites was 16.8% higher than in 2020. Following the data for the building permits, it is visible that that the biggest share in the value of completed work had other building, followed by building (49,6%). In 2020 the situation was in favour of buildings. The percentage of 39,6% was related with reconstructions, adaptations, repairs and maintenance, while the biggest share, more than half, was for new constructions. The most attractive counties for construction works were Zagrebačka, Priomorsko – goranska, Istarska, Splitsko – dalmatinska, Dubrovačko – neretvanska and the City of Zagreb. The demand for apartments has been boosted with historically low interest rates that resulted in high real estate prices. Somehow, investment in real estates is looked as the most secure way of investing money, and that is how the trend in this sector is positive. More investment in real estates, more work in construction sector. Also, same as in previous market shocks, the decrease in real estate prices, results in the decrees in the construction sector, but when trends start to be positive, the construction sector rapidly follows them and recovers. The good example are big firms in Croatia, of which were selected those that are doing business for more than five years and have the biggest revenues in 2021. Al of these firms, are performers of big investments projects and some of them are also investor like GP Krk. The height of the project investment influences the numbers in the financial results. Kamgrad it's a firm dating from 1993 than has had construction project for biggest touristic companies in Croatia like Valamar and Maistra. So, the range of their construction works is from touristic, business, residential infrastructure to airports in Zagreb, Split, Dubrovnik to cable cars (Dubrovnik). The construction of Pelješac bridge has involved many companies, including Strabag for construction of access roads and tunnels. Dalekovod and Bina Istra are specialized in their fields and that is where they generate incomes. Although, every of these enterprises have their specific performance, it can't be said that the impact of COVID – 19 pandemics was not so negative for them, which is in accordance with the hypothesis. Some enterprises felt it more in 2020, while others in 2021, which depends of their ongoing and finished projects, but also specific enterprise situation. The project time frame and the size of the market in construction sector gives the construction enterprises the opportunity to manage in the challenging times. Furthermore, in Croatia the enterprises in this sector have the growth opportunity through the earthquakes in Zagreb and Petrinja, together with the capital from EU funds. EU Commission especially emphasizes energy efficiency improvements, and the development and maintenance of infrastructure. The strengths of Croatian infrastructure sector, as the know-how, could overcome the possible future challenges. The limitation of these research is focusing on the big firms, so for the future research the author will wider the sample. Also, it will be analysed the sector impact of entering in the Schengen area, which made easier the entrance in the country, and made real estates in Croatia more attractive for foreigners.

The recommendations that are in accordance with collected data and research results are to focus on innovation and new technologies together with the existing know-how to overcome the foreign competitors treats; to regulate the state bureaucracy to make easier the investments and reskill workers. As seen, the characteristic of this sector through the long duration of projects can mitigate the consequences of events in the environment that makes the sector and the firms in it, persistent and sustainable.

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SMART CITY GOVERNANCE AND SMART CITY MANAGEMENT: AN OVERVIEW OF RECENT RESEARCH

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ABSTRACT

Cities are recognized as a vital contributors to national economic growth and a key player in achieving the Sustainable Development Goals outlined in the United Nations' Agenda 2030. As technology continues to advance, the concept of smart cities has gained significant attention among scholars from a variety of research fields. This paper aims to examine research on smart city governance and management, two critical components of successful smart cities that help to ensure that the needs of citizens are met and that the city is able to deliver its intended outcomes. Through an analysis of publications, including volume, the structure of the publications, research areas, and others, as well as a text mining procedure to identify key topics and their relationships, this study finds that smart city management research is highly multidisciplinary, with a predominant focus in computer science and other technical fields, while smart city governance research involves a mix of technical and social sciences. The results of this research also identify promising areas for future investigation.

Keywords: *Smart city governance, Smart city management, Text mining*

1. INTRODUCTION

United Nations Agenda 2030 and the Sustainable Development Goals (SDGs) recognize the importance of cities in driving economic growth and improving the lives of their residents. Nowadays, cities are experiencing a range of challenges stemming from factors such as rising population density and urbanization, shifts in environmental conditions, transportation and mobility concerns, issues of security, and the need for sustainable development. Numerous cities see the adoption of the smart city (SC) concept as a way to tackle these challenges (Allwinkle & Cruickshank, 2011). According to Ahad et al. (2020), the successful implementation of a smart city ecosystem is contingent upon addressing a variety of challenges that fall into three distinct categories: technical, socio-economic, and environmental. These categories encompass a wide range of issues that must be effectively managed to realize the full potential of a smart city ecosystem. Research on smart cities is characterized by both interdisciplinarity and multidisciplinarity. According to Choi and Pak (2006), interdisciplinary research in this field involves "analyzing, synthesizing, and harmonizing links between disciplines into a coordinated and coherent whole." This approach is necessary to effectively address the complex and multifaceted challenges facing smart cities. Additionally, the authors describe multidisciplinarity as a research approach that "draws on knowledge from different disciplines but stays within their boundaries." This approach allows for the integration of various perspectives and expertise to address specific issues within the broader context of smart cities. The most significant barrier to cities' effective transformation into smart cities appears to be the absence of proper governance systems (Praharaj, Han, & Hawken (2018). In order to optimize their socioeconomic and environmental performance, cities must establish an appropriate governance framework that facilitates coordination among the various actors involved and enables knowledge transfer, which in turn enables effective decision-making (Ruhlandt, 2018). Such a framework is essential for smart cities as it allows for the integration of various technical, socio-economic, and environmental factors that are critical for the success of smart city initiatives.

Many of the challenges cannot be managed by the cities in their current institutional arrangements and governance structures (e.g. Bolívar (2016)), therefore, additional attention should be paid to governance and management processes (Ruhlandt, 2018). Information and communication technologies (ICTs) play a central role in the governance and management of cities, as they are utilized as tools and resources to enhance the quality of life, achieve sustainable development, and foster a more open and innovative urban environment through the engagement of various stakeholders (Anthopoulos and Tougountzoglou, 2012). Therefore, urban governance should be integrated with fields of study that focus on technology and innovation, such as e-government and innovation studies, in order to develop strategies for creating smarter cities (Nam and Pardo, 2011). The concept of smart governance and management can be applied in a wide range of settings, however, in this particular study, the author has chosen to situate these concepts within the specific context of smart cities. This contextualization allows for a more in-depth examination of the research advances of smart cities in terms of governance and management. Research on the topics of smart city governance (SCG) and smart city management (SCM) is significant as both are essential for ensuring that a smart city can meet the needs and expectations of its citizens. These research topics are important as they allow for an understanding of how technology and data can be used to improve services and make informed decisions, leading to an enhancement in the quality of life for residents and the creation of a more sustainable and livable environment (Snow, Håkonsson, & Obel, 2016; Gharaibeh et al., 2017). Additionally, research on smart city governance and management can provide insight into how to effectively ensure that the development and operation of a smart city are transparent, accountable, and responsive to the needs of the community through the participation and engagement of citizens, the use of data and technology in decision-making, and the development of policies and regulations that promote sustainable development (Nam and Pardo, 2011; Ruhlandt, 2018). The objective of this study is to investigate the disparities in the progress of research on the two aforementioned concepts of smart cities, through the utilization of a literature review and text mining techniques. To achieve this, the following research questions (RQs) were prepared:

- RQ1: What is the volume and trend of published publications related to the SCG and SCM literature?
- RQ2: What is the structural composition of the SCG and SCM literature?
- RQ3: What is the geographical distribution of literature on the two aforementioned concepts?
- RQ4: What disciplines and research themes have garnered the most attention from scholars related to SCG and SCM literature?

The manuscript is organized into five sections. The second section presents an overview of previous research on smart cities, including a review of key concepts of smart city governance and management. The third section outlines the methodology employed to address the research questions. The fourth section presents the findings of the study, including the results of text mining analysis. The fifth section provides a discussion of the results and conclusions, as well as identifies areas for future research and limitations of the study.

2. LITERATURE REVIEW

2.1. Smart city research

This paper will observe smart cities as cities "whose investments in human and social capital and traditional and modern (ICT) infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance" (Caragliu et al., 2011, p. 70). Other authors, for example, Nam & Pardo (2011, p. 186) see the smart city as an "ICT-enabled public sector innovation made in urban settings" that supports

long-lasting practices "for improving the operational and managerial efficiency and the quality of life by building on advances in ICTs and infrastructures." There are different classifications of smart city research themes. The most popular one is by Giffinger et al. (2007) who classified smart city research themes into six key dimensions: smart governance, smart people, smart living, smart mobility, smart economy, and smart environment. Gupta, Chauhan & Jaiswal (2019) classified smart city research under eight broad themes where SC services, innovation and technology, and citizens' engagement in the design and development of smart cities were the most investigated themes while social impact, governance and policy, performance indicators and standards, implementation barriers were less investigated. SC strategy was as least investigated theme. Anthopoulos et al. (2016) developed a unified smart city model, which consists of 1) architecture, 2) governance, 3) planning and management, 4) data and knowledge, 5) energy, 6) health, 7) people and 8) environment.

2.2. Smart city governance

As emphasized in the introductory part, cities might not be reaching their smartness goals and not resolving challenges adequately, which may point to the problems in the organization i.e. governance and management processes. Governance, in general, is the facilitating environment that requires suitable legal structures and efficient processes to increase the government's responsiveness to the citizens' needs (UN Habitat, 2008). According to Pereira et al. (2018), the concept of governance is usually used "to describe the action or manner of governing a state, an organization, or other constellation of actors" (p.143) while smart governance is "the ability of governments to make better decisions through the combination of ICT-based tools and collaborative governance". Smart governance can be defined as the capacity of utilizing ICTs and smart actions in information processing and decision-making (Scholl & Alawadhi, 2016). The current efforts to establish a shared theoretical foundation for SCG are heterogeneous and fragmented (Ruhlandt, 2018). When compared to research on SC, SCG looks to be much more vague and disconnected (Ruhlandt, 2018). There is no clear definition of the smart city governance concept, however, some attempts to define it have been made (Pereira et al., 2018). They defined smart city governance as a form of smart governance, which enables and allocates decision-making rights to stakeholders (mostly citizens) to participate in effective and efficient decision-making processes to improve the quality of life in cities. Meijer (2016) finds that smart city governance is concerned with using new technologies to develop innovative governance arrangements and to provide better outcomes and processes. Ruhlandt (2018, p. 10) defines SCG as the "processual interplay among a diverse set of stakeholders, equipped with different roles and responsibilities, organized in various external and internal structures and organizations, driven and facilitated by technology and data, involving certain types of legislation, policies and exchange arrangements, for achieving either substantive outputs for cities or procedural changes (or both)". The smart city governance research scheme is originally developed by Bolivar & Meijer (2016) and subsequently developed by Ruhlandt (2018) and it consists of components of SCG, measurements, contextual factors and outcomes. Stakeholders, processes and technology and data are the most frequently mentioned components of SCG while the underresearched themes within components are structure and organizations (formations that allow particular processes or facilitate stakeholder interactions) and exchange arrangements in terms of relationships with stakeholders. Meijer & Bolívar (2016) find the debate about SCG confusing. The first area of confusion is related to the doubt of the technical or social nature of smart cities, the second one concerns the transformation needs of the cities to be smarter and the third one relates to the legitimacy claims of SCG.

2.3. Smart city management

Smart city management refers to the implementation of strategies and systems that facilitate the optimal functioning of a smart city. It includes the utilization of advanced technologies to enhance public services, the management of city infrastructure and financial, HR and other resources (Castelnovo et al., 2015), coordination of various municipal departments and agencies, and other immaterial capital such as social, intellectual and knowledge and information (Batangan, 2011). Cities have different strategies for carrying out and managing smart city initiatives. There is a lack of organizational and managerial research in the area of smart city management (Michelucci, De Marco & Tanda, 2016), as well as in smart city research in general (Ricciardi & Za, 2015). Organizational and managerial capabilities are crucial for digital transformation and modernization of public sector, and absence of it may lead to failure of the projects (Gil-Garcia & Pardo, 2005; Schedler, Guenduez, & Frischknecht, 2019; Wilson & Mergel, 2022). Some cities have begun funding SC manager-led departments dedicated to the development and execution of SC projects, however, this occurrence continues to be generally ignored (Michelucci, De Marco & Tanda, 2016).

3. METHODOLOGY

This exploratory research started with the retrieval of data to find relevant literature that will assist in answering posited research questions. Scopus database was selected as the source of data for the analysis as it has a wider coverage of journals, conferences and other publications than the Web of Science (WoS) database. Data retrieval, data extraction and knowledge discovery were conducted as a standard procedure for text mining technique. The first two mentioned steps were necessary for the descriptive statistics as well. In January 2023 the following queries were written: (TITLE-ABS-KEY ("smart cit*") AND TITLE-ABS-KEY ("management")) AND (LIMIT-TO (LANGUAGE , "English")) AND (EXCLUDE (PUBYEAR , 2023)) and (TITLE-ABS-KEY ("smart cit*") AND TITLE-ABS-KEY ("governance")) AND (LIMIT-TO (LANGUAGE , "English")) AND (EXCLUDE (PUBYEAR , 2023)), which indicates the application of the following inclusion/exclusion criteria:

- Keywords in the title, abstract, or keywords of the publication: "smart cit*" and “governance” and “smart cit*” and “management”
- Language: English
- Period: exclusion of the year 2023

The initial search yielded 2181 results, while the subsequent search resulted in 9862 results. A CSV export was conducted for all abstracts and document titles for further analysis.

4. RESULTS

The retrieval of data from the Scopus database provided insights into the research trends of smart city governance (SCG) and smart city management (SCM). The search parameters yielded 2181 publications for SCG and 4.5 times more publications (9862) for SCM. The term SCG first appeared in literature in 2003 and saw a steady increase in usage until 2022, when a decline was observed for the first time. Similarly, the term SCM first appeared in 1999 and saw a consistent increase in usage until 2022, when a plateau in usage was observed. This trend may indicate that the peak of interest in these topics has passed and that the field of smart city research may be maturing, or it may suggest that new perspectives in the governance and management of smart cities are emerging.

Year	Smart city governance	Smart city management
2022	384	1484
2021	408	1627
2020	323	1566
2019	308	1530
2018	248	1247
2017	192	1031
2016	129	524
2015	100	347
2014	37	239
2013	32	130
2012	9	67
2011	8	34
2010	1	18
2009-1999	2	18
Total	2181	9862

Table 1: Publications per year for SCG and SCM literature (Source: scopus.com)

To answer RQ2, publication analysis showed that SCG literature in the Scopus database is structured as follows: 44.1% articles, 31.3% conference papers, 15.2% book chapters, 3.5% conference reviews, 3.3 % reviews, and 1.3% books (29). SCM literature consists of 52.5% conference papers, 32.4% articles, 6.6% book chapters, 4.5% conference reviews, 2.8% reviews, and 67 books or 0.7%.

The geographical distribution of literature on smart city governance (SCG) reveals that the United Kingdom has the highest number of publications in this field, with 237. Other countries with a significant number of publications include India and the United States, with 220 publications each, and China, with 189 publications. Italy and Spain also have a significant number of publications, with 176 and 140 respectively, followed by Australia, with 119, the Netherlands, with 109, and Germany with 78. Similarly, the geographical distribution of literature on smart city management (SCM) indicates that China is the leader in this field, with 1604 publications. India and the United States also have a significant number of publications in this field, with 1384 and 941 respectively, followed by Italy with 746, the United Kingdom with 555, Spain with 451, Russia with 365, Germany with 309, Australia with 298 and France with 296. This data answers research question 3, which indicates that the same countries are leaders in both research topics. To answer the part of RQ4 in regards to the disciplines that researched the topics of SCG and SCM, table 2 has been created. It shows that the SCG has been researched mostly by social sciences (22.9%) followed by computer science (22.5%), and engineering (14.6%). This suggests that SCG is a topic of interest for both social and technical scientists, which is consistent with existing literature on the subject. In contrast, SCM is primarily researched by computer science (30.8%), engineering (20.2%), and then social sciences (10.1%). Further analysis, including theme analysis and text mining results, will provide additional insight into the reasoning behind these findings.

Table following on the next page

Subject area	Smart city governance	Smart city management
Social Sciences	**22.9%**	10.1%
Computer Science	22.5%	**30.8%**
Engineering	14.6%	20.2%
Environmental Science	7%	4.2%
Business, Management and Accounting	6.5%	3.3%
Energy	5.8%	6.2%
Decision Sciences	4.7%	5.9%
Mathematics	4.5%	6.3%
Economics, Econometrics and Finance	2.5%	0.8%
Other	8.9%	12.2%

Table 2: Publications by subject area for SCG and SCM literature (Source: scopus.com)

As part of RQ4, an analysis of research themes in the field of smart cities was conducted, with a focus on smart city management and smart city governance literature. This was achieved through the use of a number of occurrences exported from VOSviewer (as presented in table 3) and through the creation of maps of co-occurrences, shown in Figures 1 and 2. In terms of SCG, more broad terms such as "SC initiative" and ICT-related "internet" and "network" have high numbers of occurrences. However, the focus is on "dimensions" such as "space", "architecture", "ecosystem" and "actor" with the aim of studying the effects, understanding the phenomena of SC and identifying the best "methodologies" and "indicators" that influence "life" of the citizens. In terms of SCM, key occurrences are related to more technical specifications such as "internet", "IoT (Internet of Things)", "algorithm", "devices", as well as research topics such as "vehicles", "cloud", "traffic", "energy consumption", "safety" and "sustainability" (as shown in table 3).

	Smart city governance	No. of occurrences	Smart city management	No. of occurrences
1	(sc) initiative	391	internet	2445
2	life	307	iot	1960
3	network	266	algorithm	1296
4	internet	261	device	1222
5	dimension	209	role	1129
6	space	193	vehicle	994
7	iot	187	case study	842
8	architecture	162	cloud	738
9	security	151	scheme	624
10	population	150	traffic	555
11	big data	150	detection	555
12	india	148	computing	552
13	effect	148	energy consumption	541
14	ecosystem	145	safety	537
15	user	144	practice	510
16	methodology	143	innovation	510
17	actor	141	sustainability	493
18	indicator	141	protocol	479
19	understanding	141	learning	458
20	mechanism	141	node	453

Table 3: Top 20 term occurrences in SCG and SCM publications (Source: scopus.com)

In order to further investigate the themes studied in the field of smart cities, specifically focusing on smart city governance (SCG) and smart city management (SCM), a map was created using text data from the title and abstract fields of SCG and SCM literature in the VOSviewer software. This map visually represents the relationships and co-occurrences between different themes within the literature, allowing for a more comprehensive analysis of the research in these areas. Binary counting has been selected as the method of counting the number of occurrences of a term in a document, meaning that only the existence or absence of a term was counted. The minimum number of occurrences of a term was set to 15 for SCG which resulted in 37825 terms, and 801 terms met this threshold, the relevance threshold of 60% has been met by 481 terms. In order to obtain reliable results, certain terms were excluded from the mapping analysis: “literature”, "thing", "topic", "smart governance", "urban governance", "chapter", "city governance", and "smart". A minimal cluster size of 30 was established to prevent the formation of small clusters. The results of the analysis are presented in Figure 1, which illustrates the most frequently researched terms in the field of SCG. The visualization depicts three distinct clusters, with the largest cluster represented in red. The largest cluster, represented in red (287 items), encompasses general research in the field of Smart City Governance (SCG) that primarily focuses on the impact on citizens' lives, the SC agenda, and initiatives. The focus is on actors involved in SCG and dimensions such as smart mobility, smart people, and the economy, with a particular emphasis on the end-users/population. The second largest cluster, represented in green (114 items), encompasses research with a business and social orientation, with a focus on understanding and influencing the proper structures of organizations such as systems, communication mechanisms, access, and success. The smallest cluster, represented in blue (72 items), encompasses research that pertains to the technical aspects of SCG, with a focus on the internet and IoT as the focal point of research advances, along with architecture, algorithms, big data, and network systems.

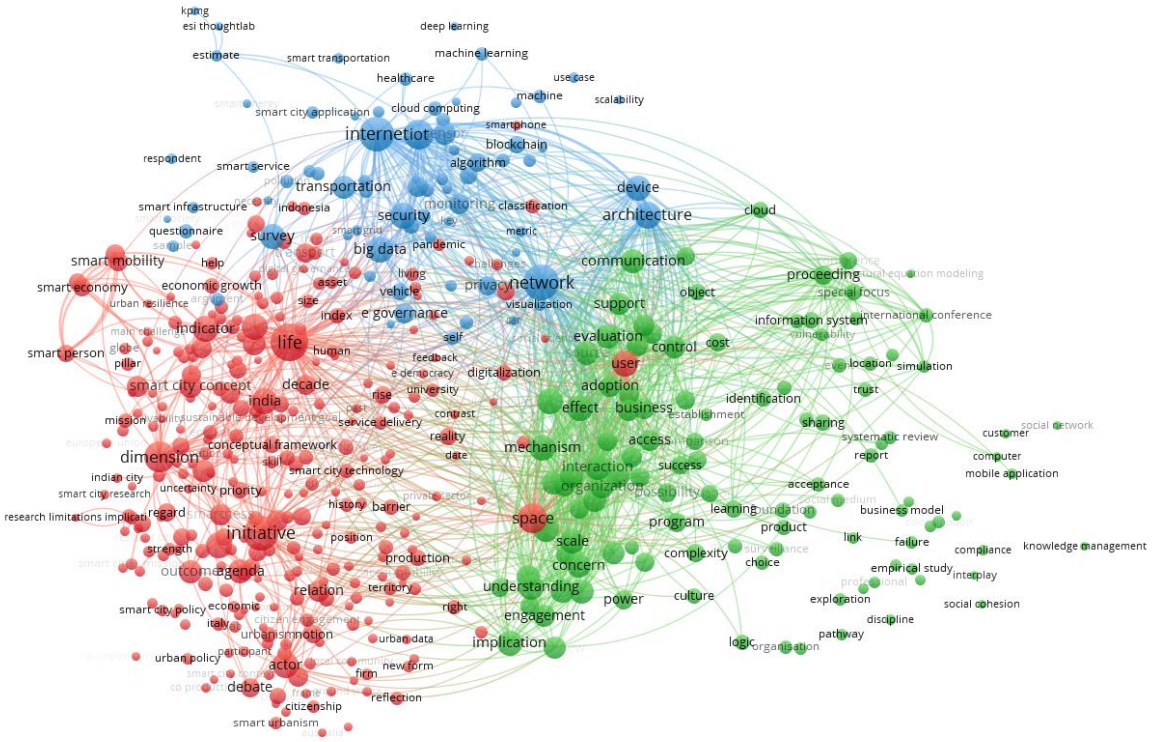

Figure 1: Co-occurrence map based on text data for smart city governance (Source: author’s work from VOSviewer 1.6.18)

For SCM, the minimum number of occurrences of a term was set to 20 which resulted in 146 858 terms, and 2208 terms met this threshold and 1325 the relevance threshold of 60%. To summarize the results, the terms "thing", "topic", "proceeding" and "preface" were excluded from analysis, and the minimal cluster size was set to 90. Figure 2 illustrates the results of the analysis of the most frequently researched terms in the field of SCM. The visualization depicts four distinct clusters. The largest cluster, represented in red (585 items), encompasses social science research that primarily focuses on projects, government roles, population, and innovation. The second largest cluster, represented in green (330 items), encompasses research in the field of computer science, with a focus on the internet and network, IoT, and devices, cloud, and security, and the protocols, schemes, and nodes. The third cluster, represented in blue (275 items) encompasses research that pertains to both computer science (centered around algorithms) and engineering literature (centered around vehicles and traffic). The smallest cluster, represented in yellow (131 items), encompasses research that pertains to energy literature and topics such as smart grids, energy consumption, and energy management.

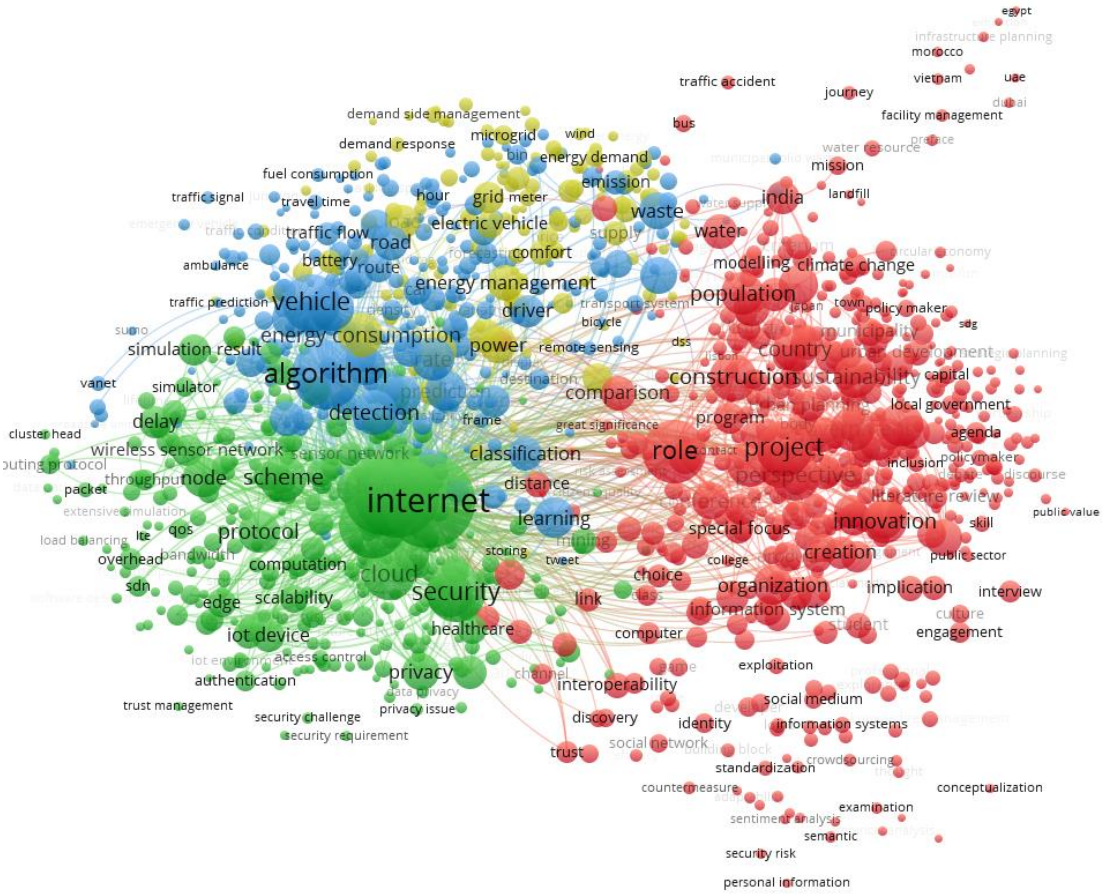

Figure 2: Co-occurrence map based on text data for smart city management (Source: author's work from VOSviewer 1.6.18)

5. DISCUSSION AND CONCLUSION

This study aimed to provide an overview of recent research in the fields of Smart City Governance (SCG) and Smart City Management (SCM) by conducting a literature review of publications indexed in the Scopus database. The results indicated a significant rise in the number of publications until 2022, followed by a decline, which may indicate a stabilization of the topic and the emergence of new research areas. In terms of the type of publications, SCG had more articles than conference papers, while the opposite was observed for SCM.

The geographical distribution of the papers revealed that the majority of research originates from economically developed countries such as India, the United States, the United Kingdom, China, Australia, Italy, Spain, and Germany. This is in line with the findings of previous research, which has shown the existence of a digital divide between these countries and Eastern European countries, as well as other developing countries, as SCs have been primarily researched in the context of developed countries (Akande et al., 2019; Vu & Hartley, 2018). Results of RQ4 reveal some interesting conclusions. Meijer's (2016) definition of smart city governance highlights the use of new technologies to develop innovative governance arrangements to achieve better outcomes, which is supported by the findings of recent research on SCG. The results of the literature review confirm that this socio-technical topic has attracted the interest of both social and technical scientists. Meijer and Bolívar (2016) argue that there is a need for additional socio-technical analyses of smart cities to improve our understanding of the interactions between social structures and new technologies. The findings of this study confirm that SCG is indeed a topic that is covered by publications from socio-technical areas, which is appropriate for the complex process of institutional change that recognizes its political nature (Meijer & Bolívar, 2016). However, the results also indicate that the topic of collaboration among stakeholders is under-researched within the field of SCG, which is consistent with Ruhlandt's (2016) findings. The term "collaborative governance" was only found 19 times in the literature, which further supports the under-researched nature of this sub-topic. Additionally, the political side of SCG is not mentioned as a focus in the literature, which is another under-researched aspect of SCG according to Meijer and Bolívar (2016). Smart city governance may involve the integration of insights and perspectives from diverse disciplines (subject areas), and research on smart city governance may therefore be considered more interdisciplinary, as it may involve the creation of a new synthesis of knowledge that goes beyond the boundaries of any one discipline. Smart city management often involves the integration of insights and perspectives from a range of disciplines, including computer science, engineering, and public policy. As a result, research on smart city management may be considered multidisciplinary, as it involves the integration of knowledge from multiple fields in order to address a particular research question or problem. This has been confirmed with the result of the research given the showed occurrences. In addition, the formation of four clusters in the analysis of SCM literature highlights the fragmentation of the field, which is characterized by a more technical than social focus, contrary to existing theories. For example, governments developing Smart Cities (SCs) do not only focus on incorporating technological advancements, but also on addressing broader issues related to management, governance, policy, human capital, and education (Lee & Lee, 2014). This finding suggests that there is a need for a more holistic and interdisciplinary approach in the research on SCM, which takes into account both the technical and social aspects of the field. Overall, the interdisciplinary and multidisciplinary nature of smart city research reflects the complexity and multifaceted nature of the challenges and opportunities that are involved in the development and operation of smart cities through the SCG and SCM. This study has several limitations, including the use of a single database for the literature review, which may have resulted in an incomplete assessment of the body of knowledge on the topic. To provide a more comprehensive understanding of the research in SCG and SCM, future studies could conduct a systematic descriptive review of the literature on specific research topics. Furthermore, future research should focus on the social aspects of both SCG and, particularly, SCM, as this study highlights the under-representation of research in these areas, particularly in the field of business and management, and political science.

Additionally, future research should explore emerging topics in the field of city governance and management, such as design thinking collaborations in smart cities (Oschinsky, Klein & Niehaves, 2022) and anticipatory governance, which takes into account future scenarios (Ninčević Pašalić & Muštra, 2022) and should be considered in the research on SCG and SCM.

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EDUCATION AND KNOWLEDGE IN THE FIELD OF SPONSORSHIP AND GENERAL FUNDING OF SPORTS INFRASTRUCTURE

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ABSTRACT

Although education and knowledge focused on a sports infrastructure may seem insignificant at first, this research was directed towards revealing how such pieces of knowledge can clarify the position of sponsorship support and the overall setting of sports infrastructure funding. Within the current situation, it can be stated that Nordic countries such as Denmark and Finland belong among the bright examples of sports infrastructure funding and sponsorship. Other countries such as Slovakia do not have such a strong position yet. Why are there such differences among the countries in relation to sponsorship and funding of sports infrastructure? It is important to identify the causes of this state, using the data that can answer this question in a relevant and accurate way. Contributing to such effort, this article creates a comparison of the situation of sports infrastructure in individual countries and summarises the findings to offer a set of recommendations for improving the current model of funding the sports infrastructure in Slovakia. To achieve this goal, several logical methods such as economic comparison, synthesis, analysis, induction, deduction, or generalization were used. The results are intended to serve as one of the primary sources for possible adjustments of different dogmatic within sponsorship and funding of sports infrastructure in Slovakia.

However, within the broader research project, the results will also be a part of educational content intended for the policymakers and sports managers responsible for further development of sports infrastructure and organizations in Slovakia, facing the challenges of the modern world and globalization.
Keywords: *Data analysis, Education, Sponsorship, Sports infrastructure, Sports Management*

1. INTRODUCTION

One of the characteristics of sports is that they contribute not only to the satisfaction of individual needs, such as fitness, entertainment, and well-being of people, but also create external effects, including social integration, support of democracy, and public health (Heinemann, 2005). Therefore, it should be in the government's highest interest to encourage people's participation in sports. There are several countries (e.g. England, Scotland, and the Netherlands) whose governments have created a health program reinforcing the importance of sports with recommendations for weekly activity. However, adequate sports infrastructure is needed, as many sports require special equipment (Hallman et al., 2012). According to Xiong (2007), the Chinese government set the improvement of sports infrastructure to support the nation's physical fitness as the main goal. In 1995 they also introduced a national policy to increase expenditures on sports. While elite sports had been the primary target since the 1960s (Hong, 2008), the new policy was supposed to increase participation in sports among the wider population. A large part of the funds raised for the national sports program was therefore spent on building sports infrastructure. The result was a significant increase in mass sports participation (Xiong, 2007). This result points out that it is important for the state to support sports infrastructure to increase the population's participation in sports. The level of adequate sports infrastructure varies among individual sports types. An obvious example is swimming, which requires a swimming pool. Therefore, the availability of infrastructure has an impact on the chosen sport. Location, financial support and state program are also vital aspects (Hallman et al., 2012).

2. METHODOLOGY

The basis for the outputs of this article is its theoretical-analytical level. This is reflected in the process of defining the essence of sports infrastructure, included in the introductory chapter. The analytical nature is expressed in the fourth chapter, presenting the results of a comparison of sports infrastructure in Slovakia, the Czech Republic, Germany and Denmark. In addition to economic comparison, synthesis, induction, deduction, and generalization were applied.

The article aims to generate knowledge in the field of sports infrastructure, focusing on the Slovak Republic. To achieve reliability, several secondary goals were set:

- Definition of the taxonomy related to the infrastructure of sports.
- Description of sponsoring within sports infrastructure in Slovakia and selected countries.
- Analysis of the funding of sports infrastructure in Slovakia and selected countries.
- Estimation of the price per m^2 of a sports facility in Slovakia and selected countries.
- Comparison of the results from individual analyses focused on the selected countries.
- Proposition of recommendations to support the sports infrastructure.

3. FUNDING OF SPORTS INFRASTRUCTURE

There are different forms of funding for sports facilities. These are primarily characterized by the persons participating in the implementation of the project (clubs, municipalities, private investors, construction contractors, etc.; as shown in Fig. 1).

In general, they can be divided into three categories (Breuer et al., 2010):

- *Pure funding models* – the public authority or sports club obtains capital for the sports facility via its own funding or other forms of funding (e.g. loans or state funding).
- *Complex funding models* – funding and operation can be carried out by several entities within a public-private partnership (e.g. leasing, sponsoring, selling the naming rights).
- *Operational models of funding* – The construction and operation of the facility are entrusted to a private entity, and the executor of public authority assumes control tasks.

The funding of sports infrastructure can therefore be divided into three levels: funding using public resources, funding using private resources, or funding based on a public-private partnership.

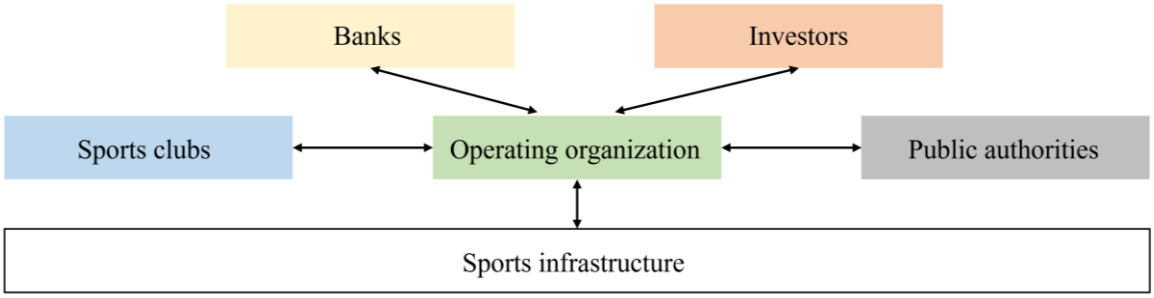

Figure 1: A comprehensive model for funding of sports infrastructure
(Source: Own elaboration according to Breuer et al., 2010)

3.1. Funding using private resources

Using the example of Germany, it can be stated that the primary funding of the sports infrastructure was covered by public resources. However, general conditions have changed since the 1970s. The cost of building new facilities has been constantly increasing, leading to the need for higher investments. In addition, the financial situation of municipalities has deteriorated over the years and the professionalization and commercialization of sports, especially football, has generally increased. This raises the question of whether it is still appropriate to exclusively fund stadiums from public resources instead of new forms, via private investment. However, there are also limiting factors for private investment stemming from the special characteristics of sports facilities. For a private investor, the most important factor is that the stadium and events generate sufficient income. The limited guarantees for private investors result from the risk of exclusively sports use of the facility combined with an uncertain occupancy rate and, in the case of football, also from the risk of the home team being relegated from the first league. This results in a small prospect of return on investment. Therefore pure private investment has no economic justification. Private investments only make sense if the facility has an attractive team sport. The attribute of multi-functional stadiums, which can be used for other events such as concerts or fairs, also does not necessarily contribute to increasing returns on investment. Rational investors demand a contractual guarantee from a professional team that all future home matches will be played at that venue. This is necessary because stadiums are characterized by high fixed and low variable costs. Due to these properties, they qualify as natural monopolies whose marginal costs curve lies below the average costs curve. Without the club guaranteeing that it will play at the new stadium, private investors are unable to cover the investment costs. The risk of building a new stadium is potentially high for private investors because the success of the sports venue depends on the success of the home sports team (Breuer et al., 2010).

3.2. Funding based on public-private partnership

Public-private partnerships occur in various forms of cooperation between the state and private investors. This funding is characterized by a certain risk, financial mix, and combination of strengths of the entities involved. It often has political support. The aim is to overcome the difficulties of public or private funding models. As mentioned, the situation of public authorities is constantly deteriorating, and the risks for private investors cannot be underestimated. Of vital importance is the optimization of operating costs, which often represent the largest part of the total costs. On the one hand, private investors are more flexible due to their legal form. On the other hand, public authorities have a high degree of credit reliability. Therefore, these forms of funding are a suitable alternative for new sports facilities. The advantages of the partners' strengths can lead to a significant reduction in investment costs. This form is also associated with the sale of naming rights for the facility. Examples of naming rights contracts are the Allianz Arena in Munich (€6 million per year, 15-year term), the Veltins-Arena in Gelsenkirchen (10-year term), and the Rhein-Energie Stadion in Cologne (€2.1 million per year). For the Allianz Arena, 30-35% of the construction costs can be offset by revenue from naming rights. Naming rights agreements are a valuable source of income for public authorities or sports clubs. In professional league sports, the value of the naming rights corresponds to the attractiveness of the team and the league. In the past, agreements on the sale of naming rights occurred mainly in German professional football (Breuer et al., 2010). Currently, this model of funding sports infrastructure is being used almost all over the world. There are many examples of the sale of such rights in Slovakia. To a large extent, clubs or public authorities resort to this option to save the club. An example of the Žilina hockey club can be mentioned, which was owned by the city and was dealing with a financial issue. The city was considering the possibility of selling the club to private ownership, which later happened. They were lured away from this idea by the betting office Tipsport, which offered the city a lucrative option of buying the naming rights for the facility, which would cover the city's subsidies for the operation of the club (Filek, 2016). The most famous case in the world is the Spanish club FC Barcelona, which is in great financial difficulty. This club was looking for a way to sell the rights to name the facility with the music streaming giant Spotify, which it succeeded at. Due to the agreement, the club is to receive an amount of 75 million euros per year (a total of €310 million over a period of four years). This way, the club promotes the effort to build closer relations with the fans (Schwamberg, 2022).

4. COMPARISON OF SELECTED ANALYSED FACTORS

Within the chapter comparing selected factors, it is important to identify elements that the Slovak Republic should improve to create better conditions for sports infrastructure. Therefore, the chapter contains *a comparison of databases of sports facilities, a comparison of the sports facilities network, a comparison of the total funding of sports, and a comparison of the price per m^2 of a sports facility based on a sample of national football stadiums.*

4.1. Comparison of sports databases

Looking at the sports infrastructure databases of Slovakia, the Czech Republic, Denmark, and Germany, it can be concluded that Denmark currently has the most functional sports infrastructure database among the selected countries. This functionality is reflected in the fact that the Danish database offers detailed information for sports entities, which can be evaluated in real time. The second positive fact is the detailed presentation of planned sports facilities and the provision of information with a socio-political benefit, which brings time savings and the possibility of better planning for entities operating in sports.

From the perspective of the system's imperfections, it can be noted that although the database operates as part of the country's statistical database, it only provides partial pieces of information necessary for other functions related to the sports entities' activity (Wallrodt and Thieme, 2021). Although Germany has not created a separate database of sports infrastructure, it can be concluded that this factor will change by the end of 2023. The country is preparing an Atlas of digital sports equipment, which should copy the functions of the databases of Denmark and Finland. The first step of implementation will focus on detailed information on planned sports facilities and information with a socio-political benefit. As part of the plan, the German government will strive for providing information for other sports-related services as well as information for scientifical purposes. Slovakia and the Czech Republic are countries that are planning modern forms of data banks in the future. Currently, both countries provide inaccurate information for sports clubs and the planned construction or reconstruction of sports facilities in the country is not always clear. An important aspect is that there are absent informational elements linked to a socio-political benefit, scientific purposes, or other services that are present in modern database systems. Below (Tab. 1) is a clear comparison of selected database systems.

Parameter/Country	Slovakia	Czech Rep.	Denmark	Germany
Providing information with a socio-political benefit	None	None	Detailed	Planned, detailed
Planning of sports facilities	Partial	Partial	Detailed	Planned, detailed
Information for sports clubs	Partial	Partial	Detailed	Planned, partial
Data for other services	None	None	Partial	Planned, partial
Database for science	None	None	Partial	Planned, partial

Table 1: Comparison of databases of sports facilities in selected EU countries (Source: Own elaboration according to Wallrodt and Thieme, 2021)

In the case of implementing database systems, the price of investment and subsequent operation of such systems is also important. Wallrodt and Thieme (2021) came up with a comparison of selected countries and the funds spent on database systems. Although it cannot be clearly stated what the price of the initial investment in such a system would be, it can be estimated that it could be approximately around the level of Croatia, which has a similar economy. It is necessary to consider the fact that Slovakia has approximately four times more sports facilities, which could be reflected in the final price. It can be assumed that the price should not exceed the initial investment of Flanders, which allocated €800,000 to such a system. Therefore for Slovakia, this amount can be in the range between €400,000 and €800,000, which, given the current known funding of sports in the Slovak Republic, amounts to approximately 0.18%-0.36% of the total budget allocated for sports in the country (based on the value from 2020). The second necessary variable is the annual maintenance costs of such a system. For estimates, this factor can be based on the example of Denmark, which operates one of the most functional and versatile database systems in the EU. Denmark allocates roughly €80,000 to the maintenance of these systems every year, which translates to roughly €0.13 per inhabitant. It should also be noted that Denmark has approximately three times more sports facilities than Slovakia, which may or may not reduce the final costs for maintenance. If a more expensive maintenance scenario were to occur, it is assumed that this amount should not exceed the value of €120,000. They spend this amount on the maintenance of the database of sports entities in Flanders and Finland, which have 22 thousand and 39 thousand of sports facilities respectively. Slovakia would probably be forced to spend maximum financial resources in the amount of €80-120,000, which would represent an increase in the budget by approx. 0.04-0.05% (based on the value from 2020). Tab. 2 shows more precise data on individual price comparisons of databases in selected countries.

Country/area	Investment (€)	Annual costs (€)	Number of sports facilities	Number of inhabitants in millions	Annual costs per one inhabitant (€)
Denmark	unavailable	80,000	12,000	6	0.13
Flanders	800,000	120,000	22,000	7	0.17
England	unavailable	1,000,000	157,000	56	0.18
Netherlands	unavailable	150,000	26,000	17	0.09
Finland	unavailable	120,000	39,000	6	0.20
Croatia	400,000	unavailable	1,400	4	-

Table 2: Price of individual sports facilities databases in selected EU countries (Source: Wallrodt a Thieme, 2021)

4.2. Comparison of the sports facilities networks

The factor of the sports facilities network shows what opportunities athletes and the general public have in a given country, in terms of the availability of sports infrastructure. On this scale, Germany (approx. 230,000 sports facilities; 2.78 per 1,000 inhabitants) together with Denmark (11,896 sports facilities; 2.07 per 1,000 inhabitants) are at the top of the list, ahead of Slovakia and the Czech Republic. The difference between these two countries occurs in the coverage of sports facilities per area of the country, where Germany has approximately 0.64 sports facilities per one km^2, while Denmark has 0.28 sports facilities per km^2. In these parameters, with the number of 4,554 sports facilities, Slovakia achieves a conversion of 0.84 sports facilities per 1,000 inhabitants and 0.09 sports facilities per km^2, which are the lowest values of the sports facilities network among the selected countries. All countries are captured in Tab. 3.

Country/ Parameter	Inhabitants	Area (km^2)	Approx. number of sports facilities	Number of sports facilities per 1,000 inhabitants	Number of sports facilities per 1 km^2
Slovakia	5.5 mil.	49,035	4,554	0.84	0.09
Czech Rep.	10.7 mil.	78,871	10,115	0.95	0.13
Denmark	5.7 mil.	42,951	11,896	2.07	0.28
Germany	82.8 mil.	357,588	230,000	2.78	0.64

Table 3: Comparison of sports facilities networks in selected EU countries (Source: Own elaboration, according to Sports structure, 2022)

4.3. Comparison of sports funding

The most important factor in the comparison is the funding of sports in selected countries. With this factor, it is possible to observe that Slovakia lags behind other selected countries. An argument is that Slovakia, like Denmark or Germany, has total tied-up funds for sports from the state budget, worth approximately 0.6% of it. It should be noted that the German and Danish governments are not in charge of the construction of new sports infrastructure, these competencies are taken over by the municipalities, and the state acts as their supporter. This does not apply in the case of Slovakia or the Czech Republic. The Czech Republic is aware of this situation and its current concept of sports policy focuses on the modernization and construction of sports infrastructure, trying to increase the budget allocated to sports. Specifically, by 2020, the Czech Republic allocated roughly 1.1% of the country's total budget for sports and recreation. A closer comparison is presented in Tab. 4.

Country/Year	2016	2017	2018	2019	2020
Slovakia	122.6	126.7	175.2	218.3	219.2
Czech Republic	660.7	810.9	1,014.0	1,031.6	1,027.5
Denmark	1,099.0	1,108.3	1,166.2	1,214.3	1,232.9
Germany	7,370.0	7,927.0	8,443.0	8,882,0	9,541.0

Table 4: Comparison of sports funding in selected EU countries in millions of Euros (Source: Own elaboration, according to Eurostat, 2022)

4.4. Comparing the price per m^2 of sports facilities – sample of national football stadiums

The comparison of the m^2 price factor of the sports facilities is very difficult to interpret. The price of the sports facilities is not the same for every sport. Therefore, it was necessary to choose only one sport that would most relevantly describe this comparison. Football was selected as the most popular sport. To make the parameter more relevant, football stadiums representing sports infrastructure of national importance were selected (National Football Stadium in Slovakia, Sinobo Stadium in the Czech Republic, Parken in Denmark, and Allianz Arena in Germany). Among these stadiums, the highest price per m^2 is in the case of the Allianz Arena, specifically €1,988.30 (converted to €4,531.88 per seat). On the contrary, the lowest price per m^2 of the sports facility is in the case of Sinobo Stadium, with the amount of €676.38 (converted to €2,116.68 per seat). Slovakia was at a similar level to Germany, as the National Football Stadium price per square meter was €1,492.57 (€4,375.56 per seat). A closer comparison is presented in Tab. 5.

Stadium's name	Capacity (seats)	Costs (€)	Area (m^2)	Price per m^2 (€)	Price per seat (€)
National Football Stadium	22,500	98.45 mil.	65,960	1,492.57	4,375.56
Sinobo Stadium	19,370	41 mil.	60,617	676.38	2,116.68
Parken	38,065	86.02 mil.	70,000	1,228.86	2,259.82
Allianz Arena	75,024	340 mil.	171,000	1,988.30	4,531.88

Table 5: Comparison of sports facilities' price in a sample of national football stadiums (Source: Own elaboration, according to Sports structure, 2022)

5. RECOMMENDATIONS

Recommendations can be formed based on the performed analyses in connection with case studies that present pieces of knowledge and information in terms of sustainable management of sports infrastructure, including funding or sponsorship. One of the main solutions is capturing the current sports infrastructure in a clear database. An example can be found in Germany, which, according to Palmen (2021), is trying to ensure a similar basic database system to that of Finland or Denmark. In the future, they want to supplement the database with a section dedicated to science, which is important from the perspective of creating knowledge about sports infrastructure. Another recommendation is that Slovakia motivates and informs clubs and the general sports public about the possibilities of the modern connection of sports and sponsorship. As it was revealed, Slovakia and the sports clubs in the country often use sponsorship as a form of reaction to the threat of not being able to fund the club's operation. In the case of proper planning, this should be transformed into a form of prevention and foresight, which would not end up in an unmanageable situation with these steps. Linking IT and sports infrastructure is also a relevant recommendation. This link is described by Kim et al. (2020). South Korea is trying to use science and technology to improve the performance parameters of its athletes in swimming sports. Although it is a controversial topic, it draws attention to the fact that there are many similar examples of the connection between technology and science (Koman et al., 2022; Bouquet et al., 2022; Holubčík et al., 2021), and it is only a matter of time before this "technical doping" becomes a part of the routine training of athletes. However, the topic of ecology should not be omitted either. It still resonates more and more in connection with globalization. A recommendation in this direction can be formed from Dong's example (2022) who thinks that it is important for the country's national "green policy" to be connected with the policy of new infrastructure construction in the first place. This is the only way to ensure an effective connection between ecology and development. The second factor is the building of an innovative sports infrastructure that supports ecological transformation and respects the local conditions.

Based on the analyses, according to the highest representatives of sports in Slovakia, every invested euro can be returned to the state budget fourfold, but only under the conditions that the government reacts in a targeted, efficient manner within a reasonable time frame (KPMG, 2018; Tumová, 2019; Pashuth, 2020).

6. CONCLUSION

Knowledge and information in the field of sports infrastructure funding and sponsorship can be assessed as strategically important. In the global overall development of society, this scientific and analytical knowledge is often pushed to the sidelines, and reactions to emerging situations are done based on feelings, impulses, and beliefs that do not stand on real, tangible foundations. An example can also be seen in the case of available pieces of information on sports entities in Slovakia, which not only do not contain basic data but do not include the introduction of appropriate databases that would serve scientific purposes in the future either. The shortcomings of Slovakia can also be observed in other attributes that were described, whether it is the funding of sports as such, the network of sports facilities, or their price. An important factor in changing this situation is the use of examples of good practice showing how to properly fund sports infrastructure and support sponsorship in sports from a technical, ecological, and financial perspective. The limiting factor of the research presented in this article is mainly represented by the limited data sources. The challenge for state representatives is the application of the provided pieces of knowledge in the execution of Slovakia's national policy, with its effects on the setting of local sports policies as this is specifically emphasized by Hoekman et al. (2022).

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THE INFLUENCE OF INTERNATIONAL LEGAL REGULATIONS REGARDING TERRORISM

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ABSTRACT

The subject of this review article is the impact of international legal regulations regarding terrorism and terrorist activities. The aim of the work was to point out the importance and problems of the international legal regulation of terrorism. The subject of this review article is the impact of international legal regulations regarding terrorism and terrorist activities. The aim of the work was to point out the importance and problems of the international legal regulation of terrorism. Despite efforts to define and sanction terrorism through various international conventions and agreements, there is still a lack of a unified and comprehensive definition of terrorism in international law. This lack of definition is a problem in the processing of terrorist activities, as well as in the development of effective mechanisms for preventing and suppressing terrorism. International law has an important role in the fight against terrorism, but that it is only one of many instruments in this process.

Keywords: *international legal frameworks, fight against terrorism, definitions of terrorism, international cooperation, human rights*

1. INTRODUCTION

Terrorism is a global problem facing all countries. The use of violence and criminal acts as a means to achieve political goals often poses a threat to international peace and security. In order to counter this challenge, the international community has taken numerous steps to establish legal regulations that would ensure an effective fight against terrorism. International law, including international humanitarian law, international criminal law and international public law, has a significant role in regulating this issue. In this review article, we will analyze the impact of international legal regulation in relation to terrorism, particularly emphasizing international conventions and instruments issued by the United Nations, as well as relevant provisions of international criminal law. We will also consider how this legal framework is applied in practice, including examples of case law and international courts. Finally, we will analyze the opportunities and challenges regarding the future development of international legal regulation related to terrorism. Terrorism is increasingly considered as a topic in academic research, which is a consequence of its increasing importance in the world. In the last twenty years, it has turned from a specialized field into a huge topic that is increasingly present in the literature (Osiecki, 2022; Saul, 2020; UN Security Council, 2022; Stubbins Bates, 2011; Bordás, 2014; Pilgrim, 1990). International criminal law is also often associated with terrorism and there is a large body of literature that can be applied to research in this area. The aim of this article is to provide an overview of how international law is used in the fight against terrorism, although both areas are very complex and often overlap. These overlaps affect the decentralized nature of the international legal order and agreements between states related to international crime.

2. THE FIGHT AGAINST INTERNATIONAL AND TRANSNATIONAL CRIME

International and transnational crime represent a challenge for the international community in the fight against organized crime. This form of crime refers to criminal acts that begin or continue beyond the borders of one state, and that affect several states or international bodies (Najetović, 2010).

Two terms related to crime are distinguished: international crime and what is often called "transnational crime". Although the two terms are different, they are often treated together under the name "international crime". The boundaries between these two types of crime are blurred and there is disagreement about which crimes fall into one category or the other. However, the differences between these concepts are important, especially when it comes to the question of retrospection and jurisdiction. One of the most common forms of international crime is human trafficking, including trafficking in women and children for the purpose of sexual exploitation. This form of crime is particularly widespread in countries with a weak economic situation, where people find it difficult to find work and where there is a high level of poverty. Human trafficking also occurs in countries with high migration rates, where people seeking a better life are often victims of fraudsters who take advantage of them (Mušić, 2014). Another form of international crime is drug trafficking. This type of crime refers to the production, transport and sale of narcotics at the international level and represents one of the biggest challenges in the fight against international crime. Drug cartels are often organized and spread over several national borders, which means that their work cannot be effectively suppressed by just one country. International cooperation is key to fighting this type of crime. The international police agency Interpol plays an important role in the fight against international crime, including drug cartels. The agency provides support and cooperation between different national police agencies to ensure that criminals cannot escape across borders. Transnational crime also includes organized crime, such as mafias and criminal groups. These groups are often organized across national borders and tend to adapt to new circumstances and technologies to achieve their goals (Najetović, 2010). They are often linked to other criminal activities, such as terrorist financing and human trafficking. International crime refers to criminal acts tried before international criminal tribunals, such as aggression, crimes against humanity, genocide and war crimes. This type of crime is characterized by a trial before the International Military Tribunal in Nuremberg, where it is established that these are acts committed in violation of the rules of international law and committed by individuals, not abstract entities (Amet, 2013). Also, an important feature is that these acts can be punished for the individuals who committed them and that the provisions of international law are applied. Such criminal acts are related to the powers of an individual that go beyond national borders or rules imposed by individual states. International and transnational criminal activity poses challenges to international justice and police authorities. This is due to the fact that the activities of these groups are not limited to one country and they often use different methods and technologies to avoid arrest. International and transnational criminal activity also creates challenges for international cooperation between states, as it is necessary to operate in accordance with different legislations and legal systems (Đurić-Atanasijevski, 2008). International and transnational crime problems can be addressed in a number of ways, including international cooperation between states, the involvement of international organizations and judicial bodies, and the enhancement of crime-fighting capacity at the national level. International agreements on cooperation and exchange of information between states are important for the successful fight against international and transnational crime. Therefore, international organizations, such as Interpol and Europol, also play an important role in the coordination and exchange of information between countries (Duffy, 2015). In any case, the fight against international and transnational crime requires a coordinated and holistic approach involving various institutions, such as police agencies, the judiciary, secret services, international organizations and states. It also requires the use of various methods, such as prevention, investigations, trials, enforcement of sentences and confiscation of assets.

3. TERRORISM IN THE ROLE OF INTERNATIONAL CRIME

Terrorism is considered one of the most serious forms of international crime. These are acts of violence aimed at creating fear and panic in the public, in order to achieve political, ideological or economic goals. Terrorist organizations often operate transnationally, crossing the borders of different countries to carry out attacks or prepare future actions (Mušić, 2014). The international community faces major challenges in the fight against terrorism. One of the biggest problems is the lack of a unified approach and legal framework that would enable effective coordination between states (Wood, 2013). In addition, terrorist organizations often use sophisticated methods of communication and financing, which makes them difficult for authorities to catch. One of the key ways to fight terrorism is prevention (Schmitt, n.d.). This implies work on strengthening social and economic stability in countries that are exposed to the risk of terrorism, as well as strengthening international cooperation regarding the exchange of information and research on potential terrorists and their activities. The international community must also work to strengthen international legislation related to terrorism. This implies the establishment of unique definitions of terrorism and criminal acts related to terrorism, as well as the creation of mechanisms for the extradition and trial of perpetrators of such acts. Although the fight against terrorism is a complex and long-term process, the international community must continue to work on strengthening cooperation and coordination to ensure that terrorism does not become a ubiquitous and everyday problem. It is necessary to constantly monitor the development of the situation and adapt strategies and measures according to needs, in order to ensure an effective fight against terrorism. International cooperation is crucial in the fight against terrorism, because terrorist groups often operate across the borders of different countries (Najetović, 2010). Therefore, it is necessary to develop and establish mechanisms for the international exchange of data and cooperation between the various authorities responsible for the fight against terrorism. International and EU conventions also play an important role in the fight against terrorism. They define criminal acts that are considered terrorism, as well as the obligations of states in the fight against terrorism. In addition, international bodies, such as Europol and Interpol, play an important role in data exchange and cooperation between countries in the fight against terrorism. In addition, it is necessary to develop preventive measures that prevent radicalization and the acquisition of support for terrorist groups. These measures include education and public awareness, and support for de-radicalization and reintegration programs. However, it is important to remember that the fight against terrorism is a long-term and complex process. It is necessary to constantly monitor the development of the situation and adapt strategies and measures according to needs, in order to ensure an effective fight against terrorism (Đurić-Atanasijevski, 2008). Terrorism is defined as a criminal offense involving the use of explosive or lethal means in or against public places, government property, the public transport sector or infrastructure, with the intent to cause death or serious bodily injury, or to cause major destruction resulting in major economic damage. This definition is contained in the 1997 Terrorist Bombing Convention, which is one of many international agreements dealing with this topic (UN Security Council, 2022). It is necessary to constantly monitor the development of the situation and adapt strategies and measures according to needs, in order to ensure that terrorism is effectively suppressed at the global level. This provision states that any person who commits a misdemeanor, whether he committed it independently or as an accomplice, as well as any person who organizes or induces others to commit a misdemeanor or in any other way contributes to the commission of a misdemeanor by a group with a common goal, may be guilty of a misdemeanor (Mušić, 2014). This includes all those who intend or aim to encourage general criminal activity or assist the group, or commit an act with knowledge of the group's intention to commit a particular act. In 1994, the UN General Assembly adopted the Declaration on Terrorism, which defines terrorism as criminal acts with the intention of creating a state of terror among the population, groups or

certain individuals due to their political nature (Office of the United Nations, 2021). Such acts are always considered unjustified regardless of the political, philosophical, ideological, racial, ethnic, religious or other reasons that can be cited as justification. In the world of international law, the UN General Assembly is not a source of international law and was not intended to set a legal definition of terrorism. Even if there had been such an intention, a consensus could probably not have been reached. Still, there is an argument for current agreements that require states to define the criminal background of certain terrorist acts. These acts must be defined by acts of domestic criminal legislation and must be committed with the aim of causing fear. The International Convention for the Suppression of the Financing of Terrorism of 1999 presented a generic definition of terrorism, but this agreement itself does not require states to criminalize these acts, but to prevent their financing. Negotiations on reaching a general agreement on the criminalization of terrorism have yet to yield results. Although there is no transnational "crime" in terrorism, many forms of terrorism are subject to the obligation of states to prosecute and punish such acts (Duffy, 2015). The obligations arising from these agreements are limited to the signatory parties to the conventions and it is not clear whether they are reflected in customary international law. However, there is an understanding that states have an obligation to prosecute and punish certain forms of terrorism described in these agreements. Although no consensus has yet been reached on the definition of terrorism in international law, there is an understanding that states have an obligation to prosecute and punish certain forms of terrorism.

4. ISSUES OF INTERNATIONAL LAW REGARDING TERRORIST ACTIVITIES

International law plays an important role in the fight against terrorism, as it provides a framework for the actions of states and international organizations in suppressing and prosecuting terrorist activities. One of the key mechanisms is the drafting and ratification of international conventions and agreements related to terrorism (Amet, 2013). These documents define what is considered terrorism and determine the obligations of states to suppress and prosecute terrorist acts. Among the most important conventions are the 1999 International Convention on the Suppression of Terrorism and the 1999 International Convention on the Suppression of the Financing of Terrorism. International law also provides mechanisms for the cooperation of states in the fight against terrorism (Office of the United Nations High Commissioner for Human Rights, n.d.). These mechanisms include the creation of bilateral and multilateral cooperation agreements, as well as work within international organizations such as the United Nations and the European Union. Cooperation can take place in areas such as the exchange of information, investigations and the suppression of terrorist financing. International law also provides legal solutions for prosecuting terrorists. States are obliged to fulfill their obligations under international conventions and agreements, including the extradition of terrorists to other states for trial (Schmitt, n.d.). International criminal courts, such as the International Criminal Tribunal for the former Yugoslavia and the International Criminal Tribunal for Rwanda, also play an important role in the prosecution of terrorist activities. They are specialized in prosecuting war crimes, violations of international humanitarian law and other criminal acts committed in the context of armed conflicts (Yin, 2007). However, they can also prosecute terrorist activities if they are committed in the context of an armed conflict and qualify as war crimes or violations of international humanitarian law. International criminal courts are important because they provide a mechanism for prosecuting those responsible for terrorist activities committed internationally. They also contribute to the creation of justice for victims of terrorism and contribute to the creation of a culture of accountability for the commission of terrorist activities. However, they have limited jurisdiction and can process only those cases that are submitted to them or that are handed over to them by states or international organizations. International law has several problems with regard to terrorist activities. First, there is a lack of a single definition of terrorism that could be applied internationally.

This lack of definition leads to different interpretations and application of the term terrorism by states, which makes the fight against terrorism at the international level difficult (Amet, 2013). Another problem is the lack of uniform mechanisms for prosecuting terrorists. States have different criminal justice systems and different approaches to prosecuting terrorists, which can lead to problems in international cooperation. Finally, there is the problem of the lack of strong international institutions that would deal with the fight against terrorism (Duffy, 2015). Although organizations such as the International Criminal Court exist, they are limited in their powers and abilities to prosecute terrorists. In order to solve these problems, it is recommended to establish a single definition of terrorism that could be applied at the international level. Also, it is necessary to develop a unified system in order to ensure a unified approach to the fight against terrorism at the international level (Lapaš, 2006). This would imply the establishment of mechanisms for cooperation between states, as well as between international organizations such as the UN, Interpol and Europol, in order to ensure efficient and effective prosecution of terrorists. It is also necessary to improve mechanisms for the prevention of terrorism, such as work with communities, education and preventive measures, in order to reduce the possibility of radicalization and strengthen society as a whole (Yin, 2007). In particular, work should be done to develop unique definitions of terrorism that would be used in the criminal law of each country, as well as to improve mechanisms for the prevention and processing of terrorist financing (Schmitt, n.d.). In addition, it is necessary to improve international cooperation regarding the exchange of information about terrorists and their activities, as well as to strengthen international courts and tribunals dealing with these issues.

5. CONCLUSION

Terrorism represents one of the biggest and most complex challenges facing international law. Despite efforts to define and sanction terrorism through various international conventions and agreements, there is still a lack of a unified and comprehensive definition of terrorism in international law. This lack of definition is a problem in the processing of terrorist activities, as well as in the development of efficient mechanisms for preventing and suppressing terrorism. However, there are several key mechanisms used in the fight against terrorism, including international criminal courts, international investigations and extraditions, as well as international cooperation in the investigation and prosecution of terrorist activities. It is also useful to conclude that international law has an important role in the fight against terrorism, but that it is only one of many instruments used in this process. It should be emphasized that there is a need for more cooperation between states and international organizations in order to combat terrorism more effectively. Ultimately, it is important to develop uniform definitions of terrorism to avoid misunderstandings and to create clear criteria for the prosecution of terrorist activities. The scientific contribution of this article is reflected in the study and analysis of existing international legal frameworks and their application in the fight against terrorism, as well as the identification of shortcomings and potential improvements in existing mechanisms. The recommendation for future research would be to continue working on the study and analysis of existing international legal frameworks, as well as the identification of potential improvements in their application. It would also be useful to explore new approaches and mechanisms to combat terrorism, such as preventive measures and legal mechanisms to combat terrorist financing. Research into the impact of international legal frameworks on human rights and freedoms should continue to be an important part of research, as well as the development of new approaches to harmonizing the need for security and protection of human rights.

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